Blue Hill (Ephesus-Fordham) District Transportation Impact Analysis

Public Information Meeting #3 (Continued)

December 11th, 2017

Presented By:

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Director of Planning and Development Services – Town of Chapel Hill

Craig Scheffler, PE, PTOE
HNTB North Carolina, PC

Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

Today's Presentation

- Introduction by Town Staff
- Review of Content Presented in Previous Meeting
- 2030 Multi-Modal Analyses
- Superstreet Discussion
- Next Steps

Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

Review of October 2017 Presentation

- Discussion of Traffic Model Process and Methodologies / Assumptions
- 2030 **"No-Build"** Scenario – Area Growth
- 2030 **"Build"** Scenario – 5 Developments in Blue Hill District
- 2030 **"Build + Mitigation"** Scenario – Discussion of Potential Changes to Entire Study Area to Provide Adequate Vehicular LOS
- Comparison of Traffic Model Visualizations

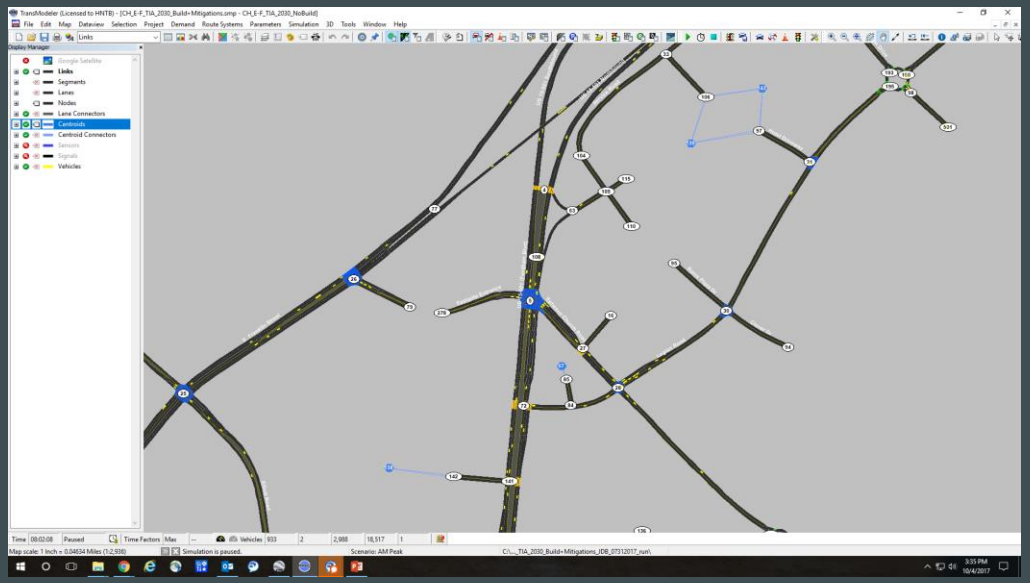
Blue Hill (Ephesus-Fordham) District

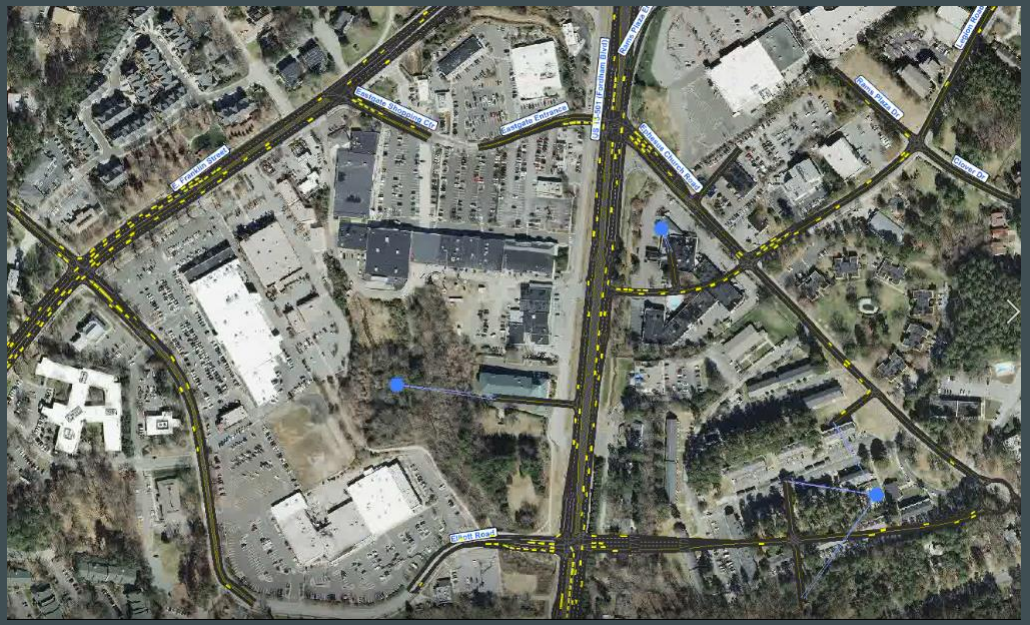
Transportation Impact Analysis

2030 Scenario Simulation Models

2030 “Build” Scenario PM Peak Model

2030 “Build + Mitigation” Scenario PM Peak Model





Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 Multi-Modal Analyses

Transit Operations

- Utilized the 2030 TRM Regional Model for Ridership Data
- Compared to 2010 TRM Base Year to Estimate Growth Factors
- 2030 Model Accounts for GoTriangle DOLRT
- No Major CHT Service Changes

Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 Multi-Modal Analyses

Transit Load/Capacity Models

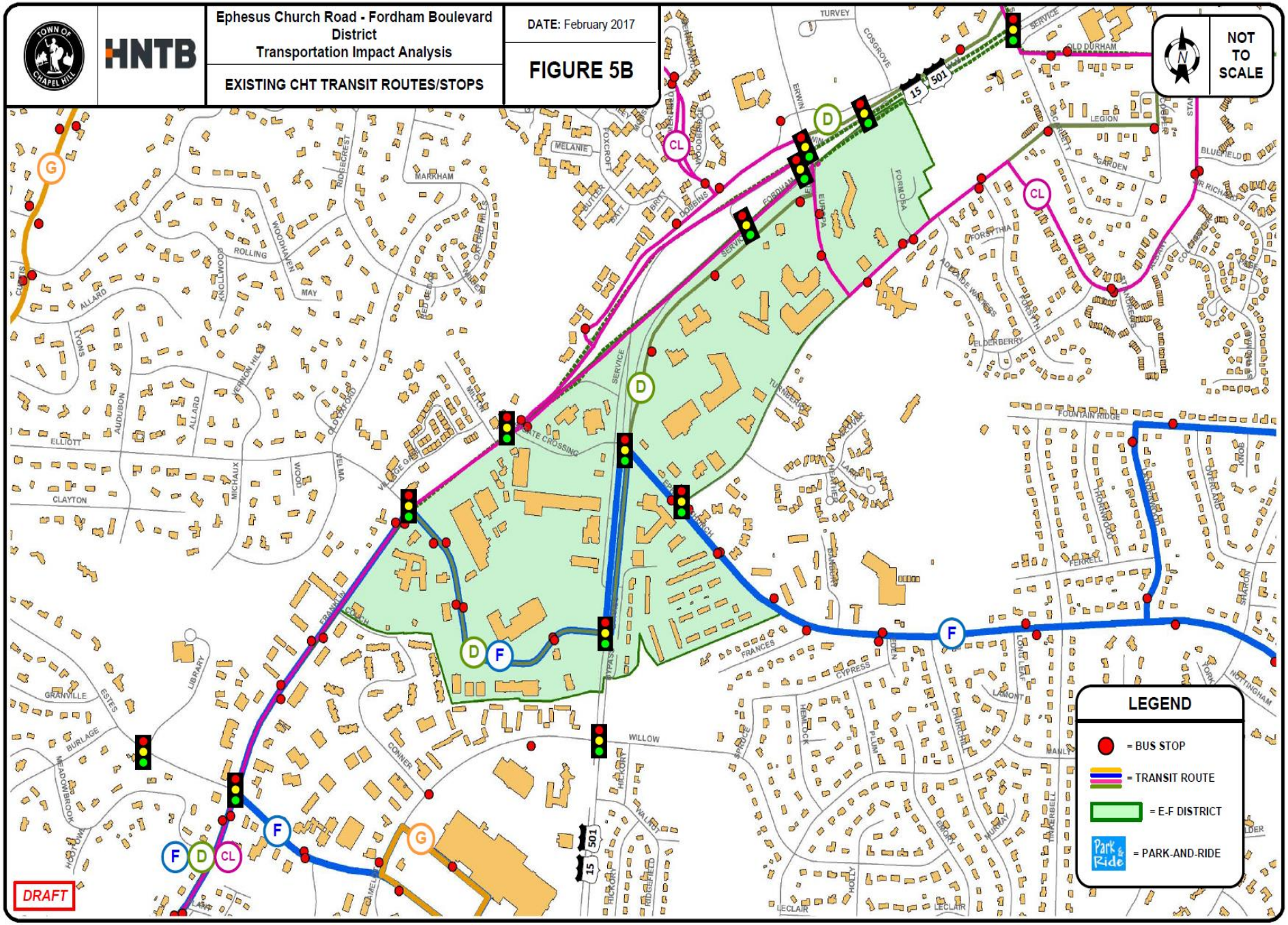
- Apply TRM Growth Rate to 2016 CHT/GoTriangle Ridership Data
- CHT CL-D-DX-F-G Routes
- GoTriangle 400/405 Routes
- Analysis for Vehicular Peak Hours
- Average Boardings/Alightings and Bus Load for each bus stop = Demand
- Bus Size = Max Capacity/Service Capacity

Ephesus Church Road - Fordham Boulevard District
Transportation Impact Analysis

DATE: February 2017

EXISTING CHT TRANSIT ROUTES/STOPS

FIGURE 5B



Blue Hill (Ephesus-Fordham) District

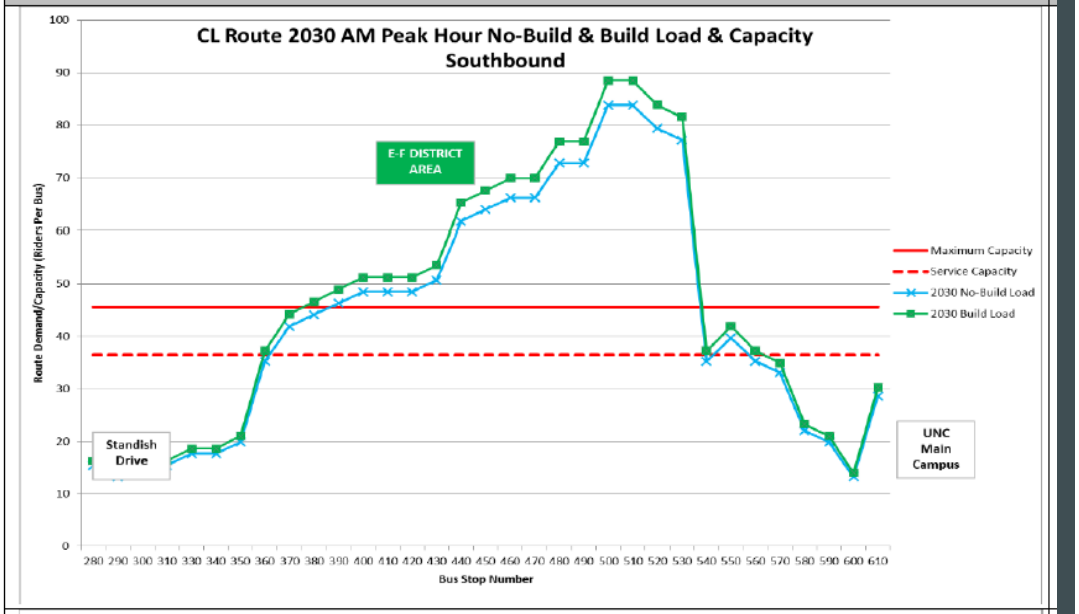
Transportation Impact Analysis

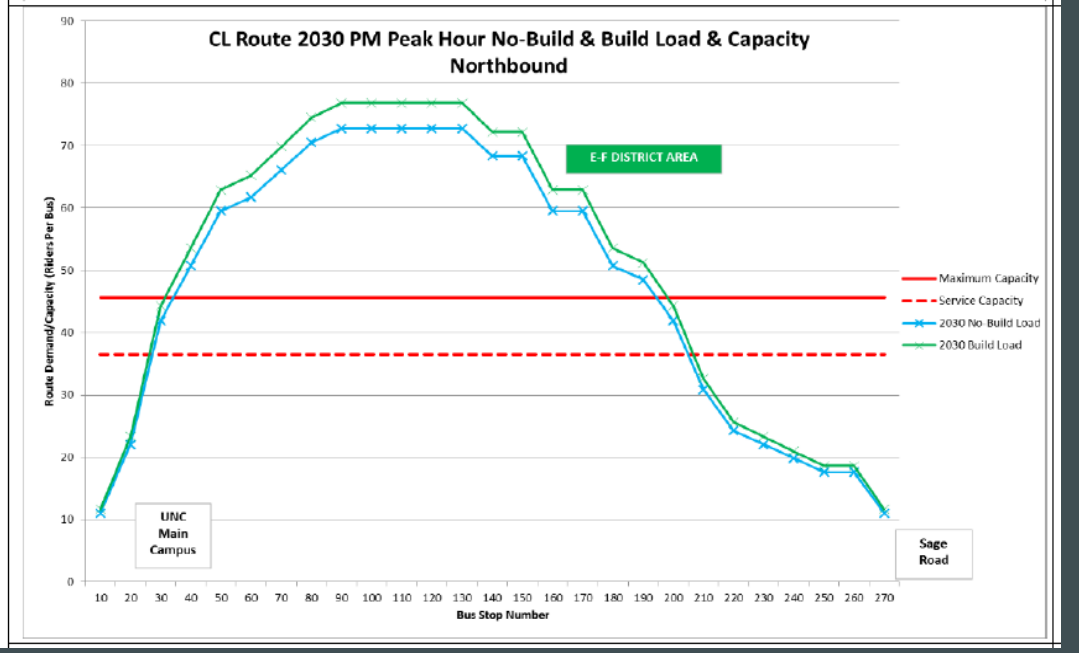
2030 "No-Build" & "Build" Scenario Results

Transit Load/Capacity Analysis

By Route/Direction/Peak Hour

CL Route





Blue Hill (Ephesus-Fordham) District

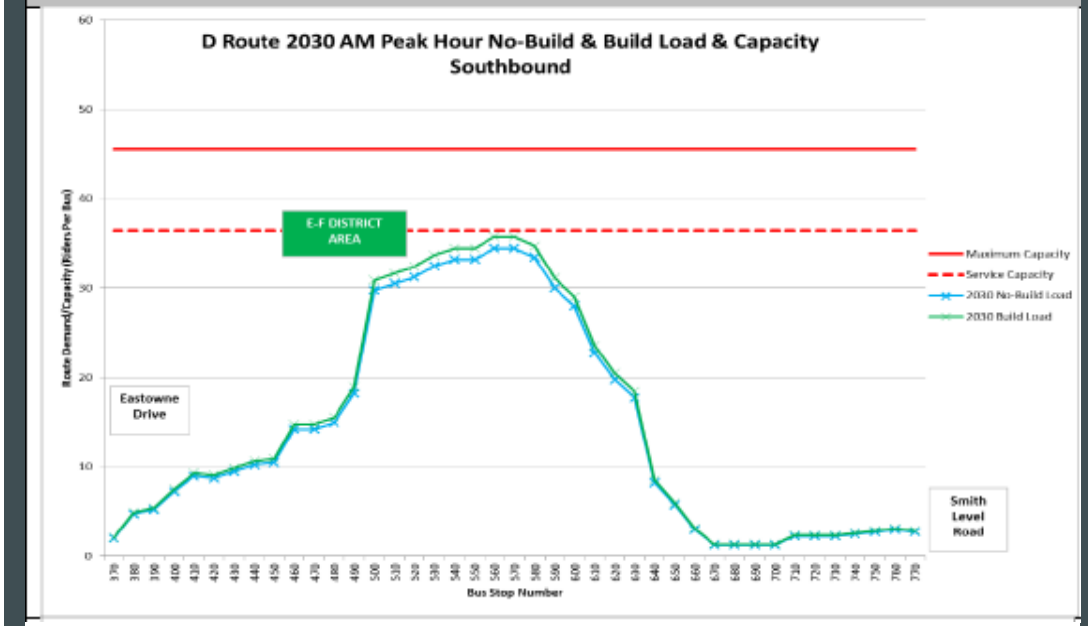
Transportation Impact Analysis

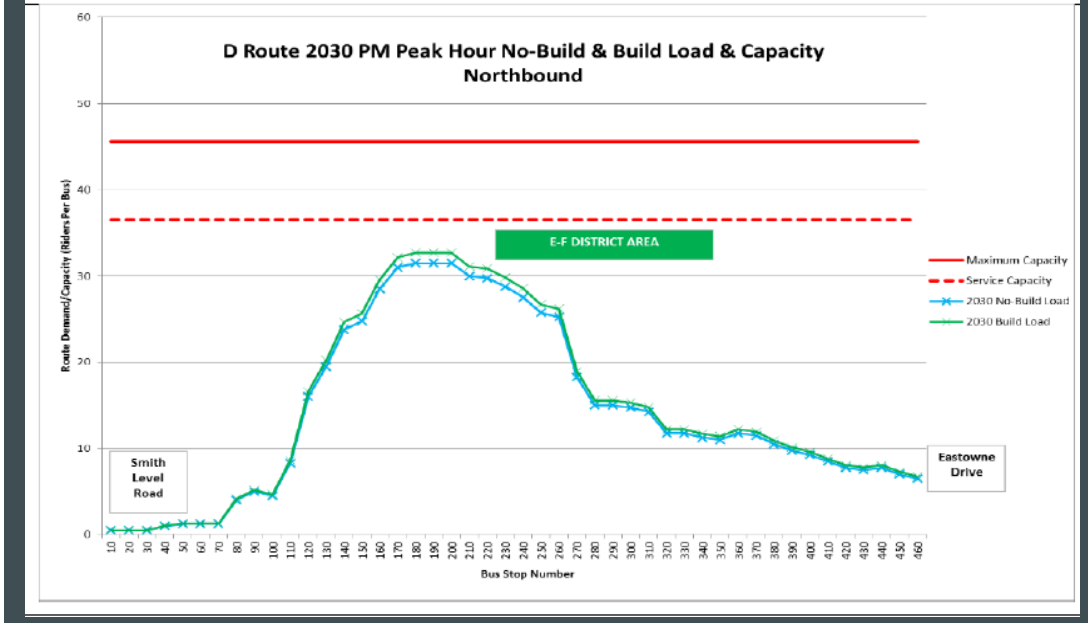
2030 "No-Build" & "Build" Scenario Results

Transit Load/Capacity Analysis

By Route/Direction/Peak Hour

D Route





Blue Hill (Ephesus-Fordham) District

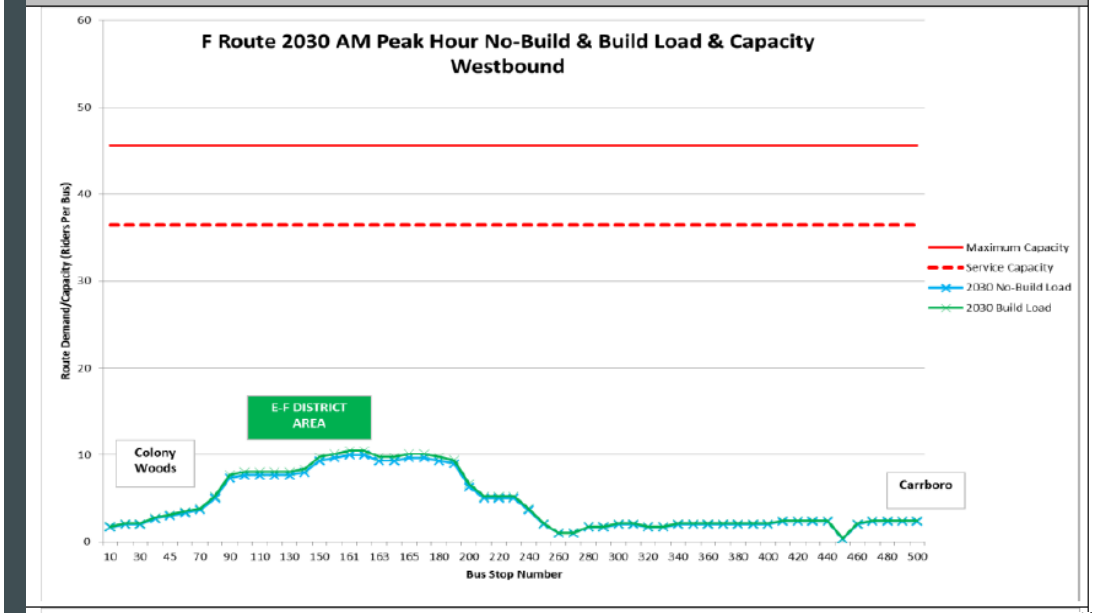
Transportation Impact Analysis

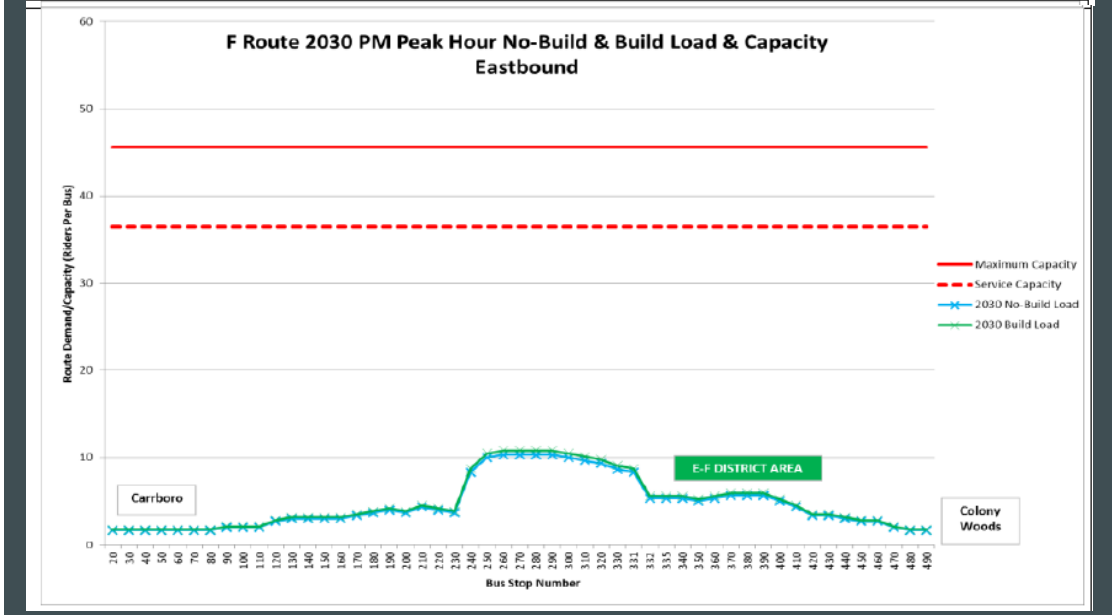
2030 "No-Build" & "Build" Scenario Results

Transit Load/Capacity Analysis

By Route/Direction/Peak Hour

F Route





Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 Multi-Modal Analyses

Multi-Modal Comparative Models

- Assesses 4 Modes “Equally”
- Provides Quantitative Measures (Speeds, Composite Scores) And LOS
- Evaluation By Segment (Block) By Direction And Peak Hour
- Vehicle Characteristics Affect Other Modes (High Volumes/Speeds)

Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 Multi-Modal Analyses

Multi-Modal Comparative Models

Transit LOS

- Bus Frequency (total buses per hour)
- Passenger Load Factor (average for all routes)
- Bus Stop Amenities (excellent, good, fair, poor)
- Bus Stop (typical, major)
- Vehicular LOS – combination of general traffic and signal operations characteristics

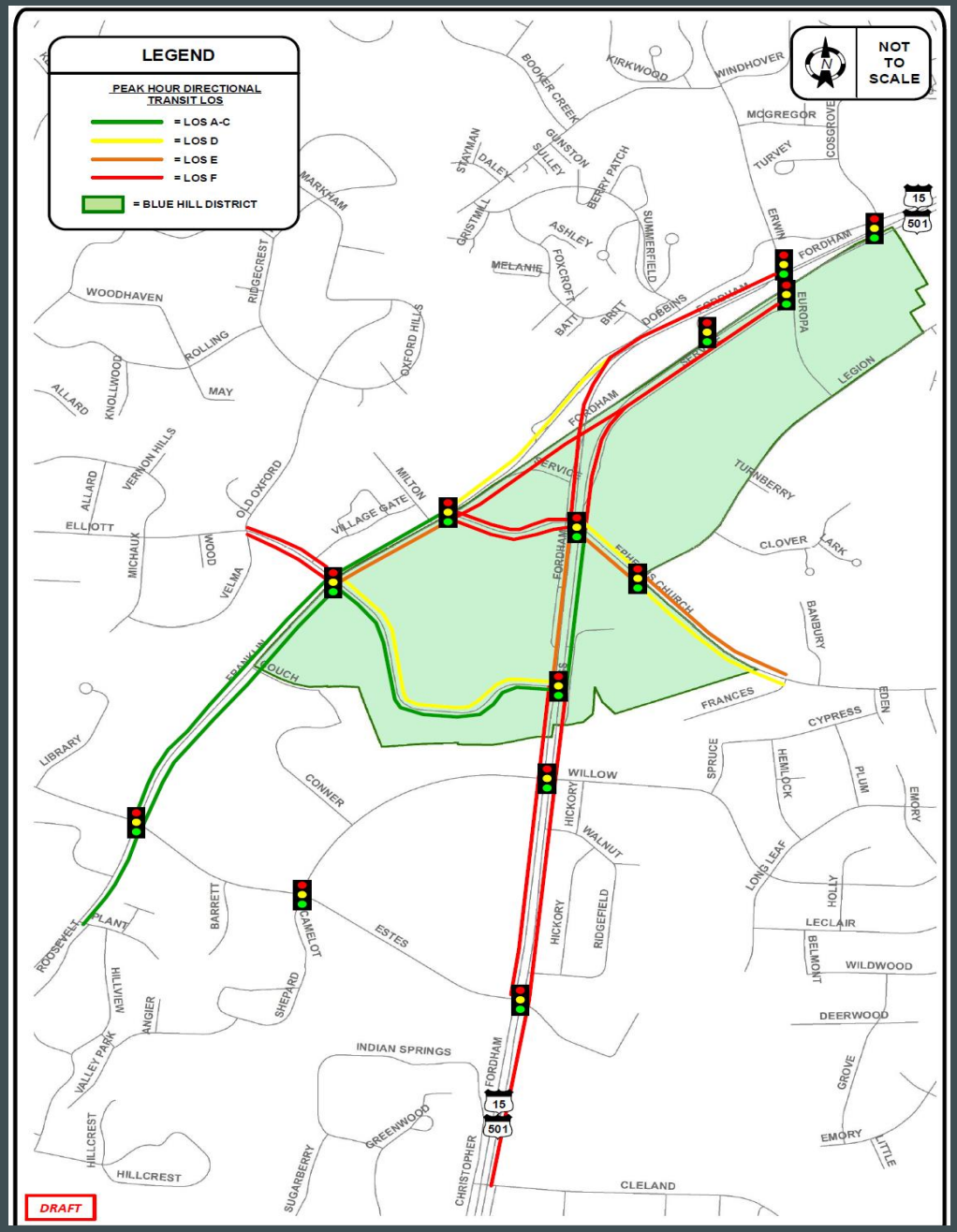
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "No-Build" Scenario

Multi-Modal LOS Results

Transit / Pedestrian / Bicycle



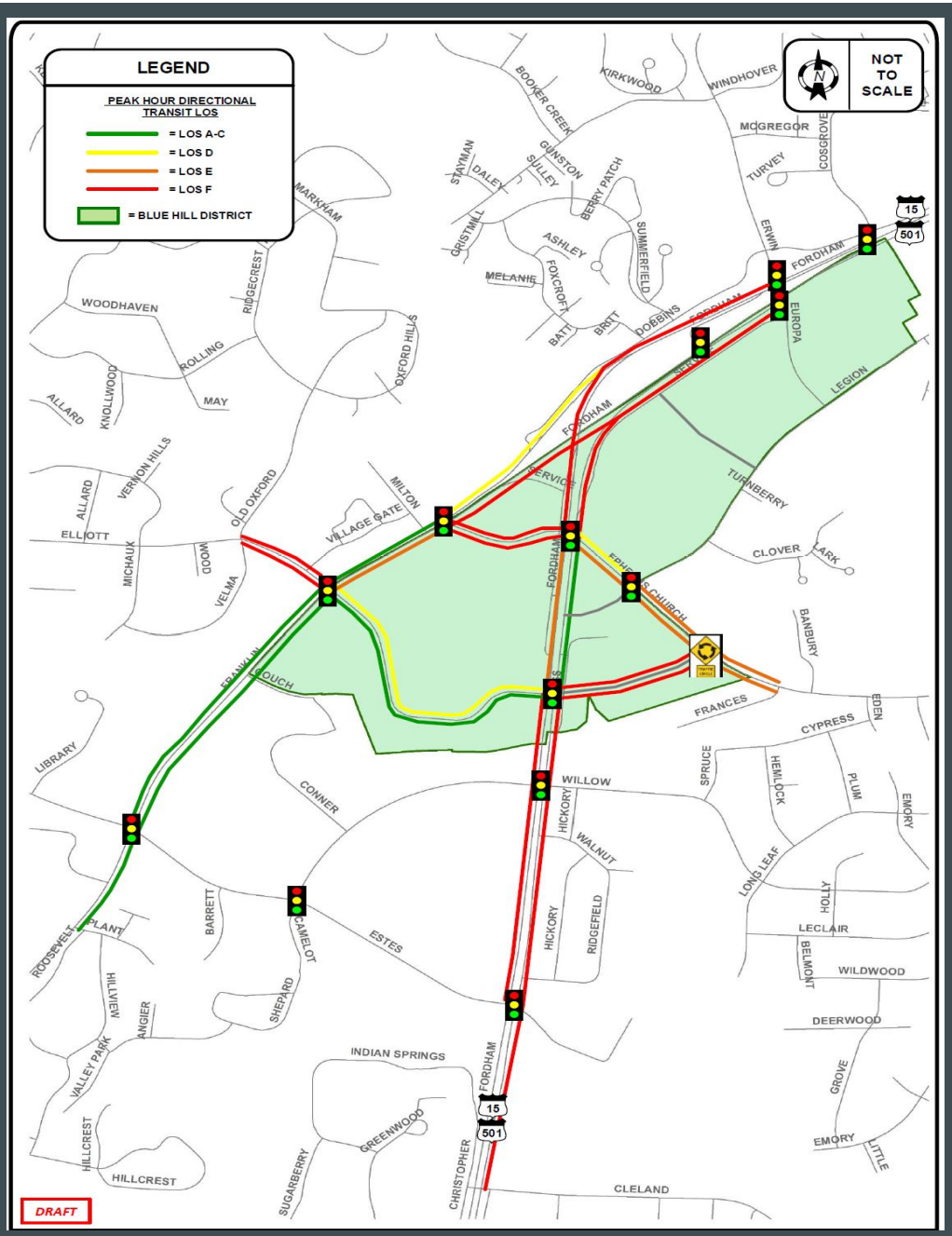
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "Build" Scenario

Multi-Modal LOS Results

Transit / Pedestrian / Bicycle

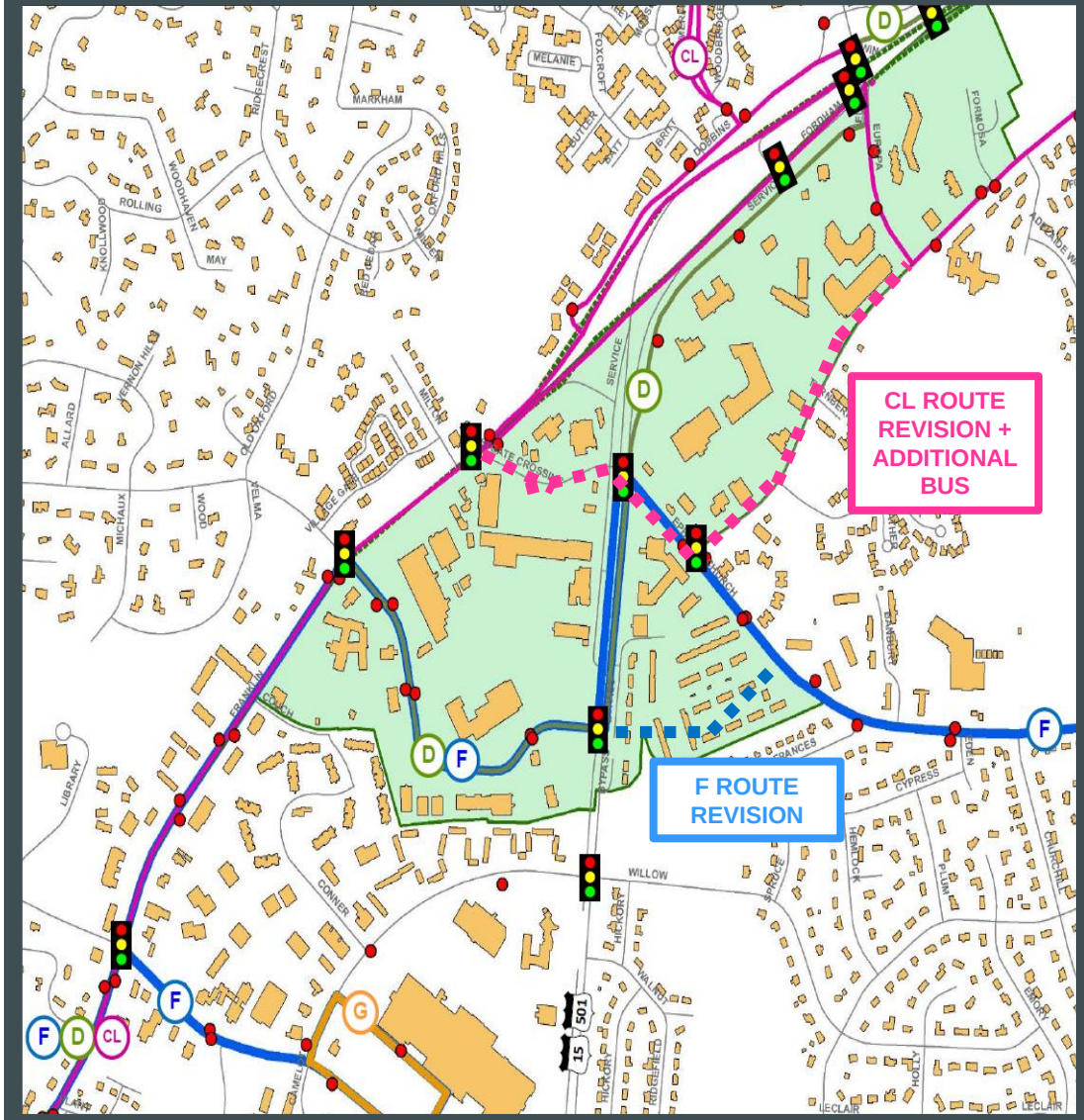


Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "Build+Mitigation" Scenario

Potential Transit Improvements



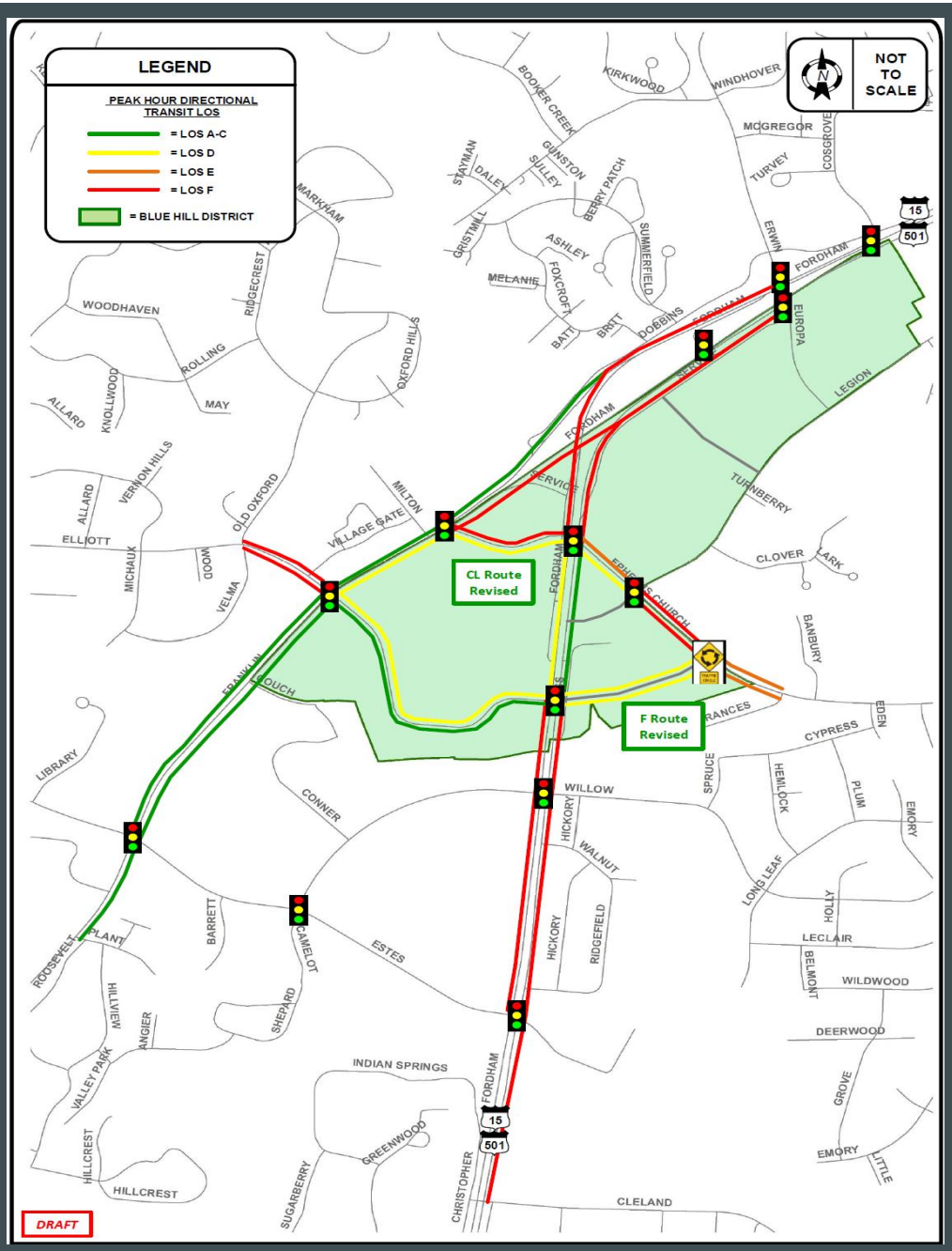
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "Build+Mitigation" Scenario

Multi-Modal LOS Results

Transit / Pedestrian / Bicycle



2030 Multi-Modal Analyses

Pedestrian Operations

- "No-Build Scenario" Assumes Only Committed Projects in Blue Hill District Area
- Assume Blue Hill District Developments will Maintain/Improve Local Sidewalk Connectivity & Crossings
- Town Mobility Plan – Considered in Mitigation Scenario
- Other Change is Adjacent Traffic Volumes

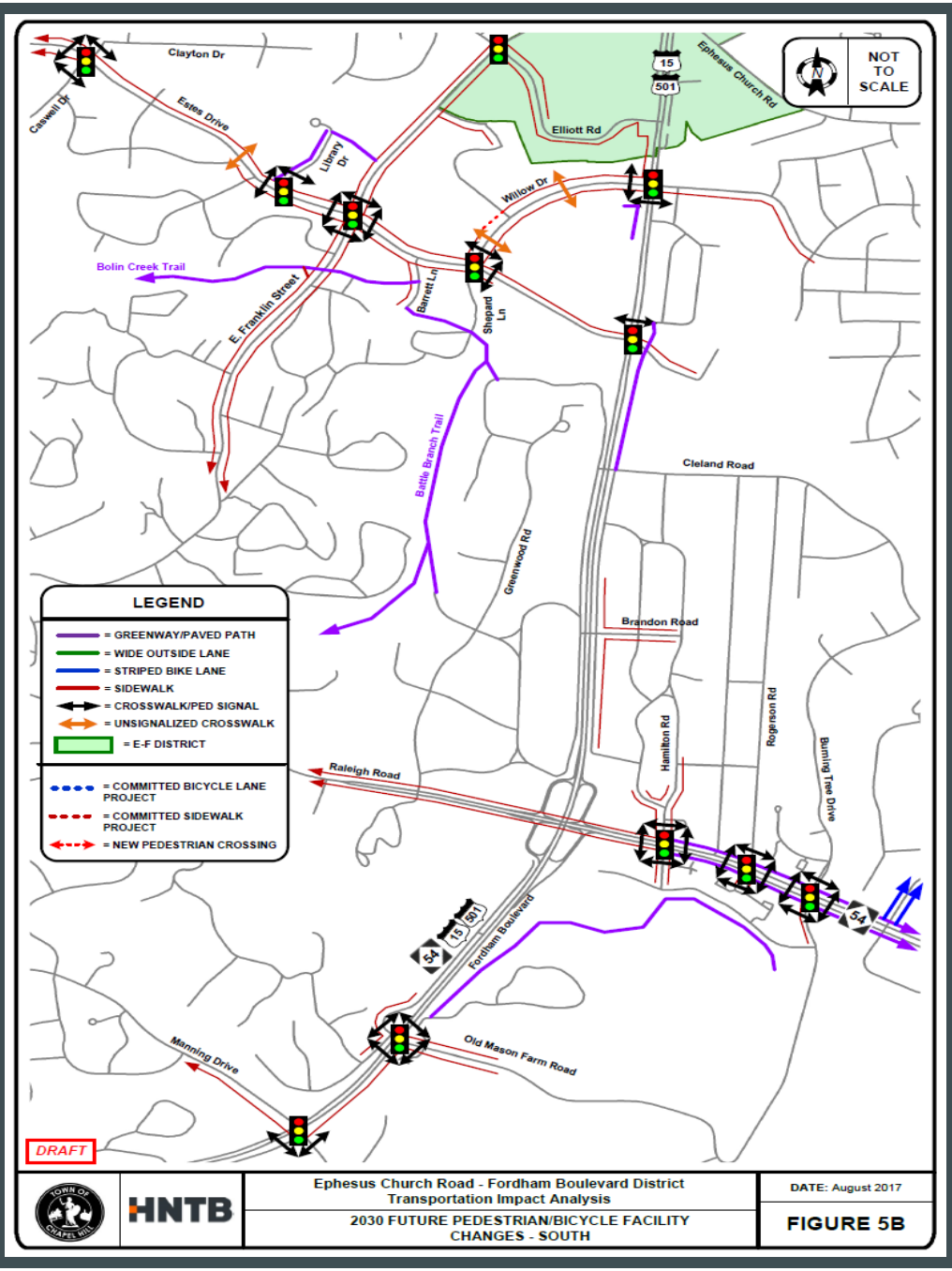
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 Multi-Modal Analyses

"No-Build" Scenario

Pedestrian/Bicycle/Greenway Improvements



Ephesus Church Road - Fordham Boulevard District
Transportation Impact Analysis

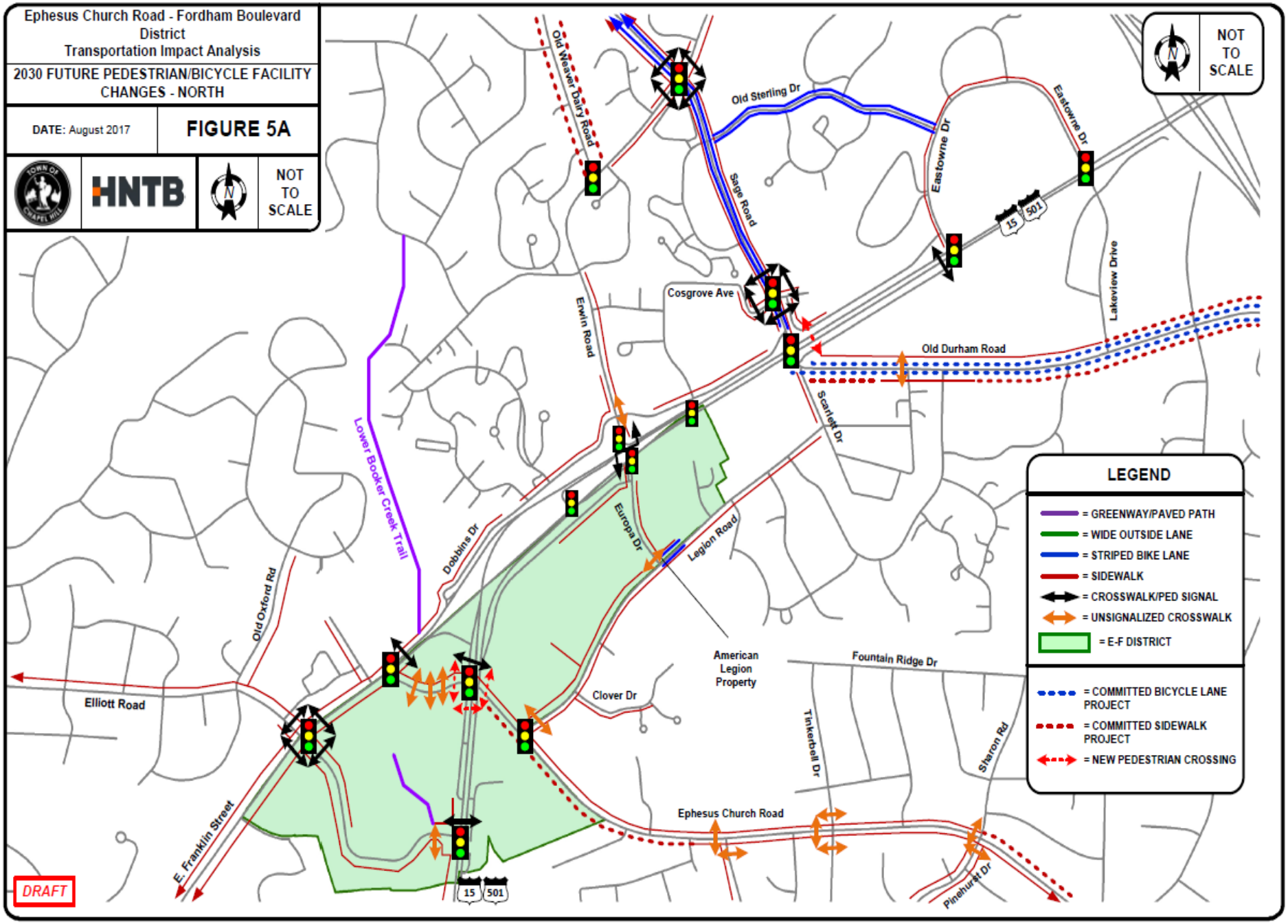
2030 FUTURE PEDESTRIAN/BICYCLE FACILITY CHANGES - NORTH

DATE: August 2017

FIGURE 5A

HNTB

NOT TO SCALE



Blue Hill (Ephesus-Fordham) District

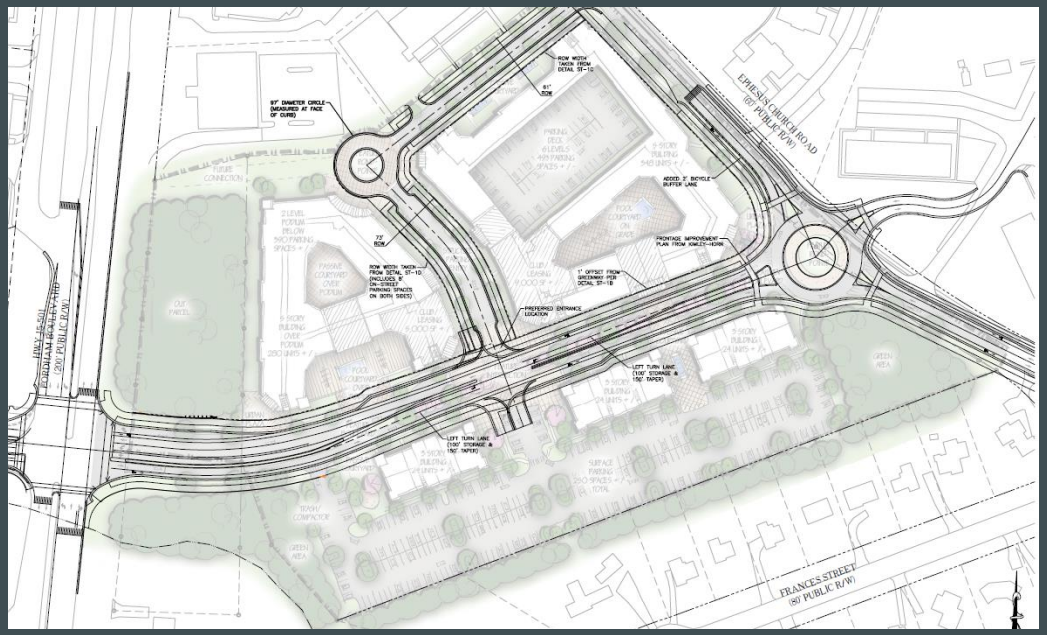
Transportation Impact Analysis

2030 Multi-Modal Analyses

"Build" Scenario

Pedestrian/Bicycle/Greenway Improvements

- Development-Related Road Projects Have Local Ped / Bike Elements Included in LOS Analysis



Blue Hill (Ephesus-Fordham) District

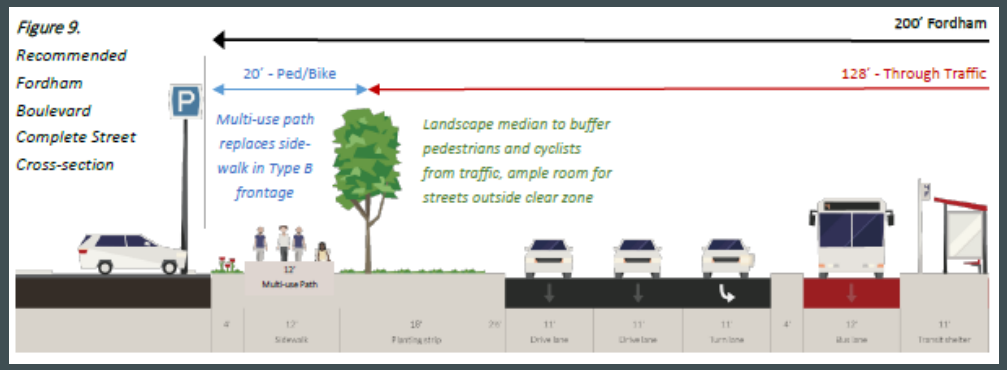
Transportation Impact Analysis

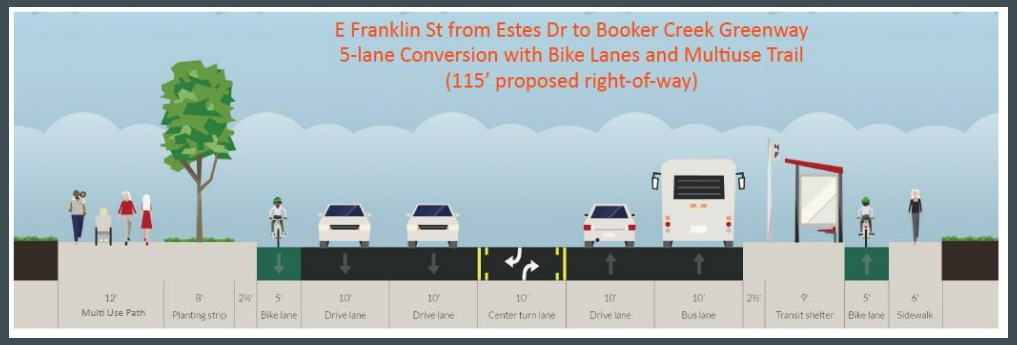
2030 Multi-Modal Analyses

"Build+Mitigation" Scenario

Pedestrian/Bicycle Improvements

- Consider Effects of Mobility Plan Projects on 4 Blue Hill District Corridors Studied for LOS
- Use Planning-Level Assumptions for Recommended US 15-501, E. Franklin Street and Local E-F District Roadway Cross-Sections





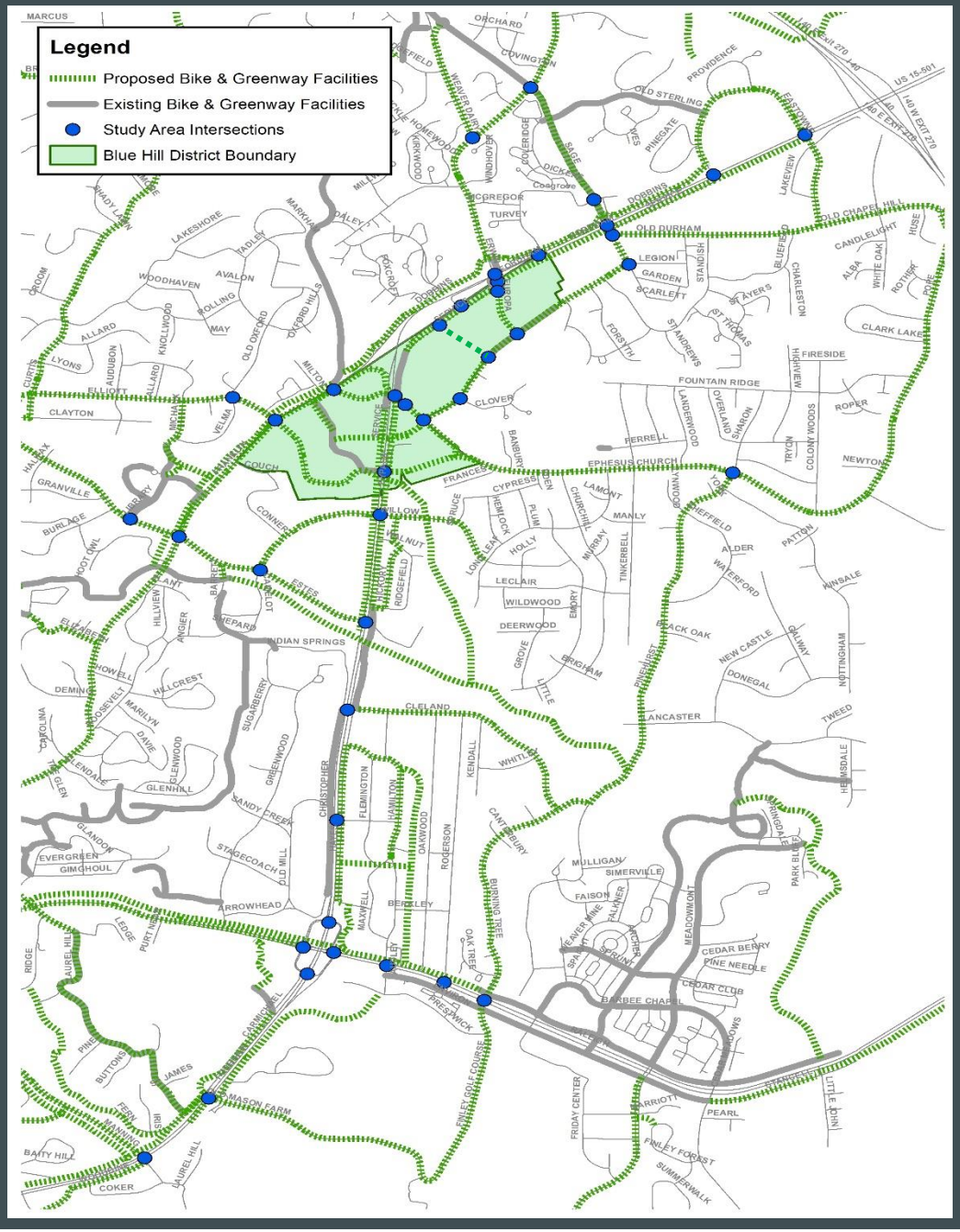
Blue Hill (Ephesus-Fordham) District

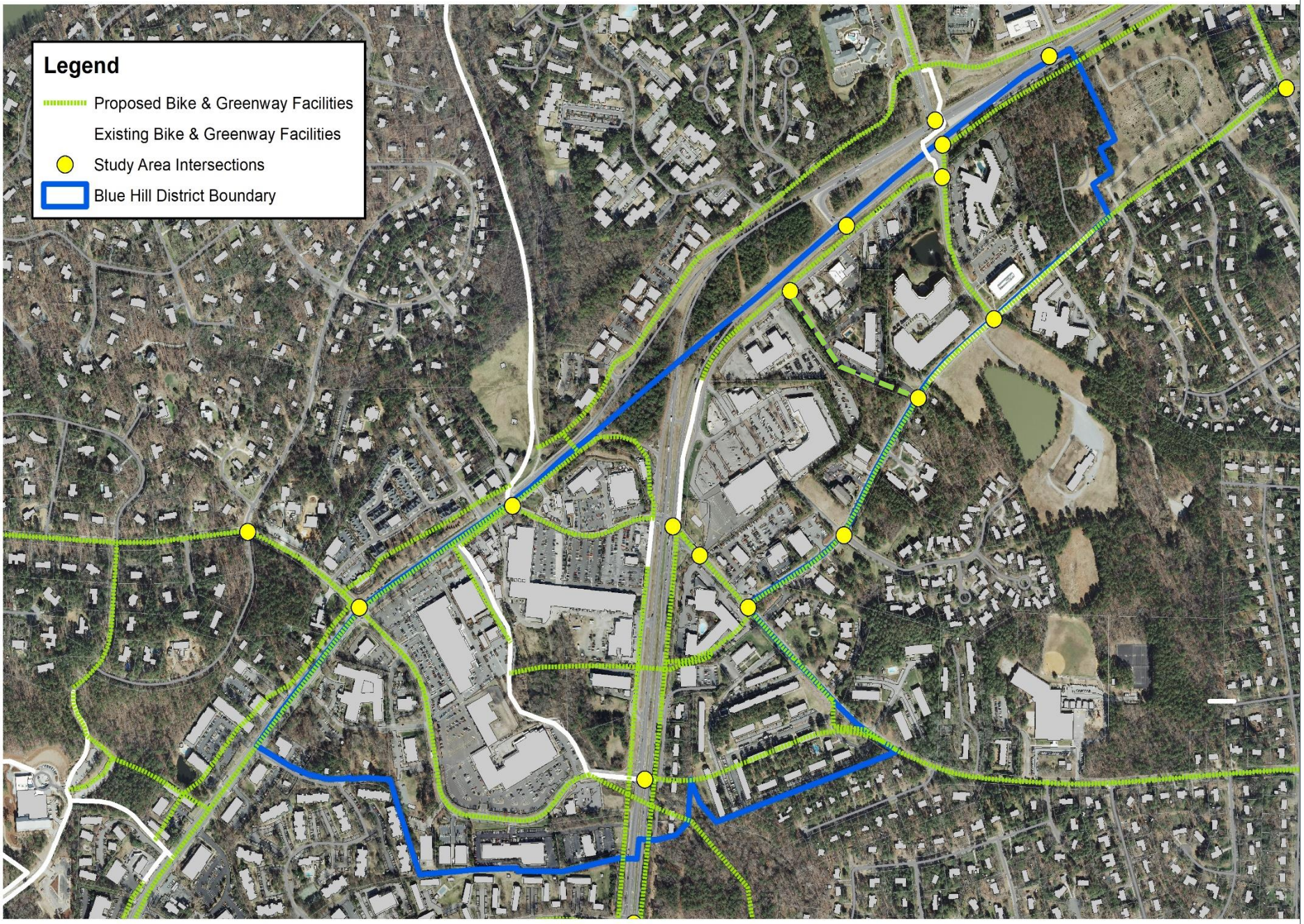
Transportation Impact Analysis

2030 Multi-Modal Analyses

"Build+Mitigation" Scenario

Bicycle/Greenway Improvements



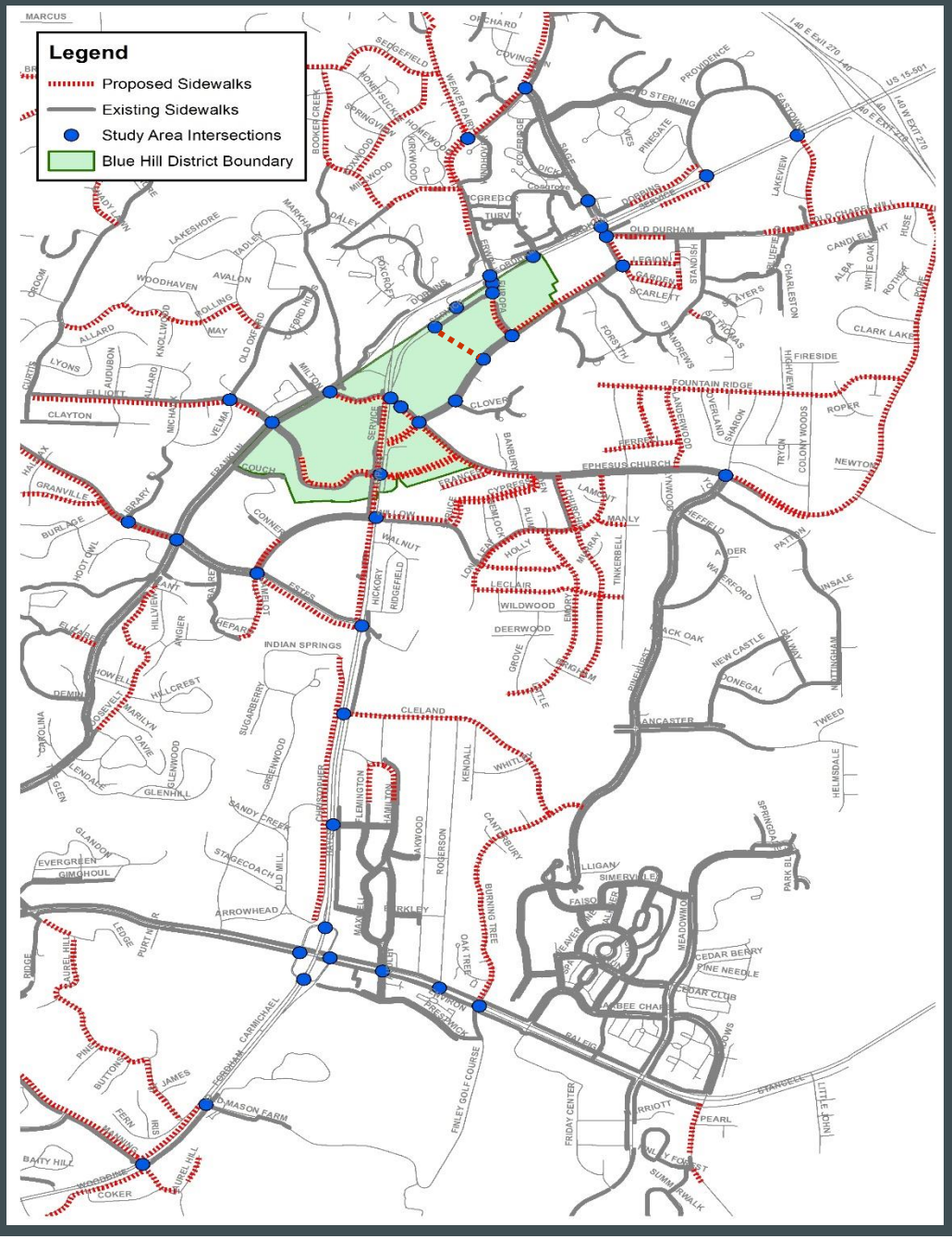

Legend
Proposed Bike & Greenway Facilities
Existing Bike & Greenway Facilities
Study Area Intersections
Blue Hill District Boundary

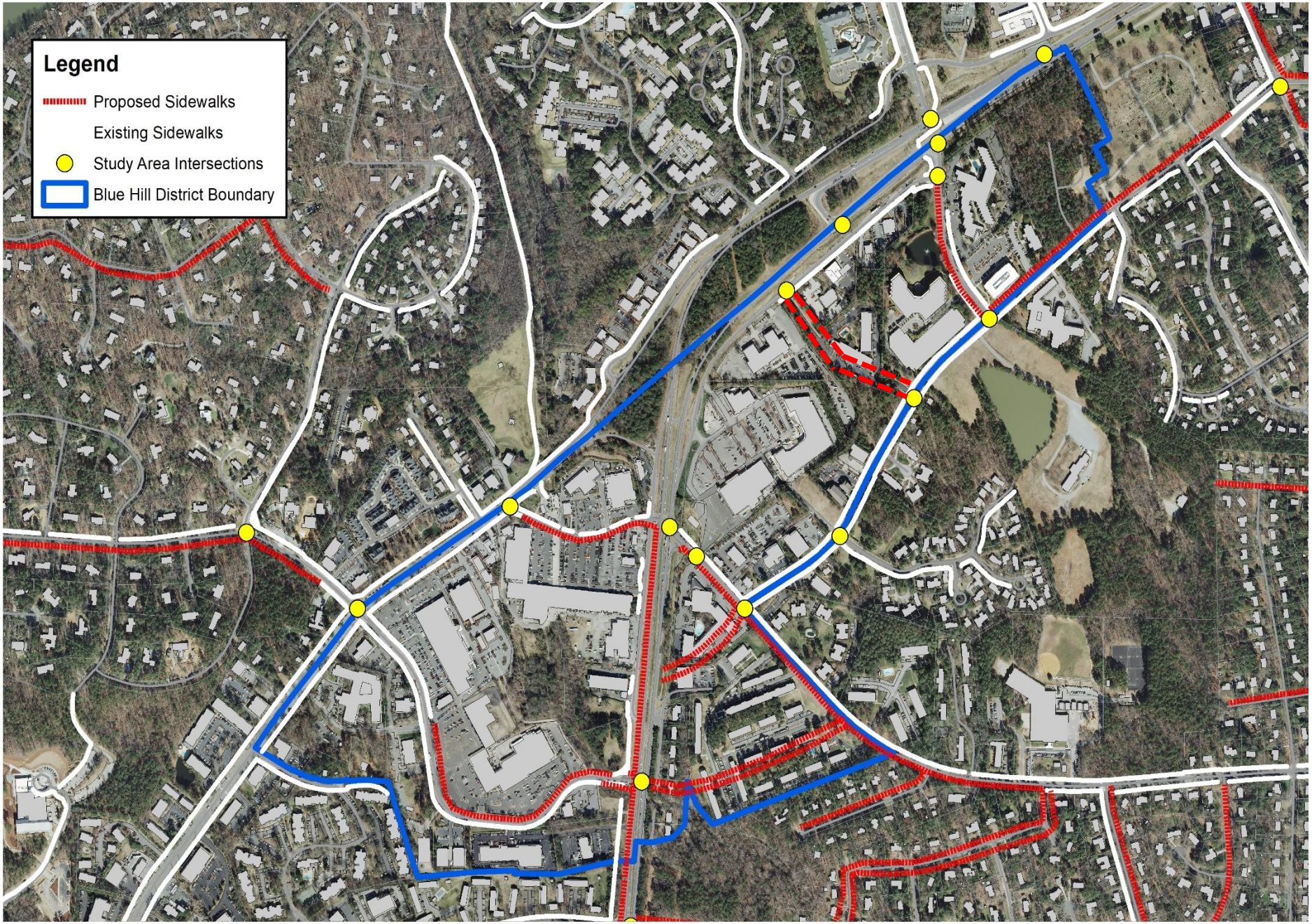
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 Multi-Modal Analyses

"Build+Mitigation" Scenario
Pedestrian Improvements




Legend
Proposed Sidewalks
Existing Sidewalks
Study Area Intersections
Blue Hill District Boundary

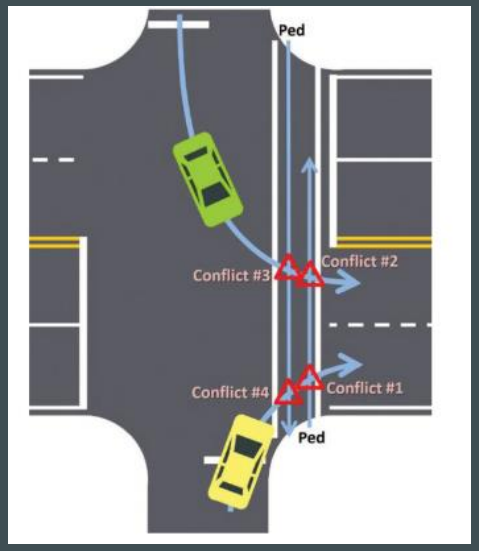
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 Multi-Modal Analyses

"Build+Mitigation" Scenario
Pedestrian Improvements

- High-Visibility Crosswalks
- Mid-Block Crosswalks
- Curb Extensions
- Leading Pedestrian Intervals



2030 Multi-Modal Analyses

Multi-Modal Comparative Models

Pedestrian LOS

- Sidewalk Presence (Y/N)
- Sidewalk/Roadway Separation (adjacent, typical, wide)
- Sidewalk/Roadway Protective Barrier (Y/N)
- Affected by Traffic Volume/Speeds and Other Roadway Characteristics for Each Segment
- Split into Sub-Segments if Sidewalk Changes Along a Block

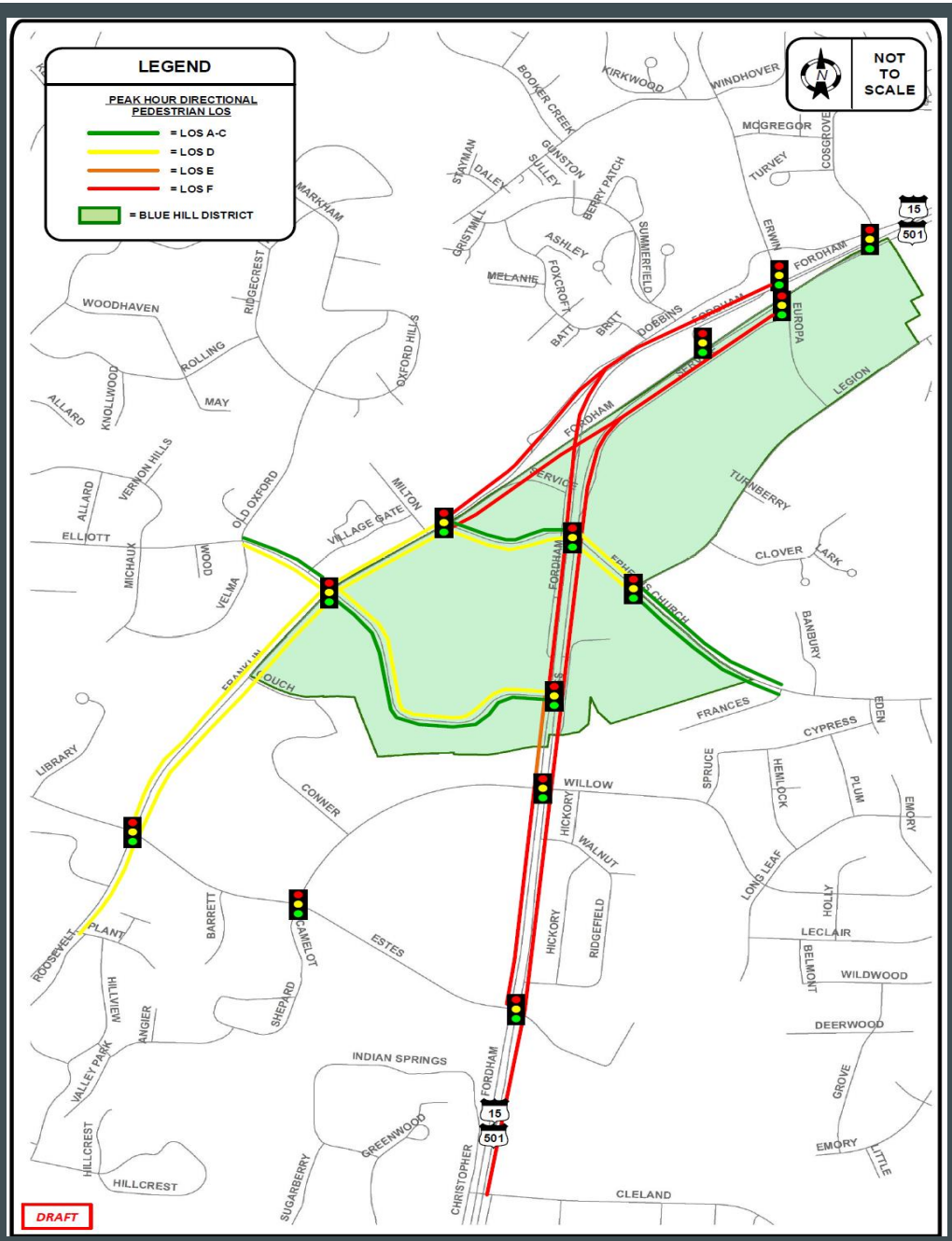
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "No-Build" Scenario

Multi-Modal LOS Results

Transit / **Pedestrian** / Bicycle



Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "Build" Scenario

Multi-Modal LOS Results

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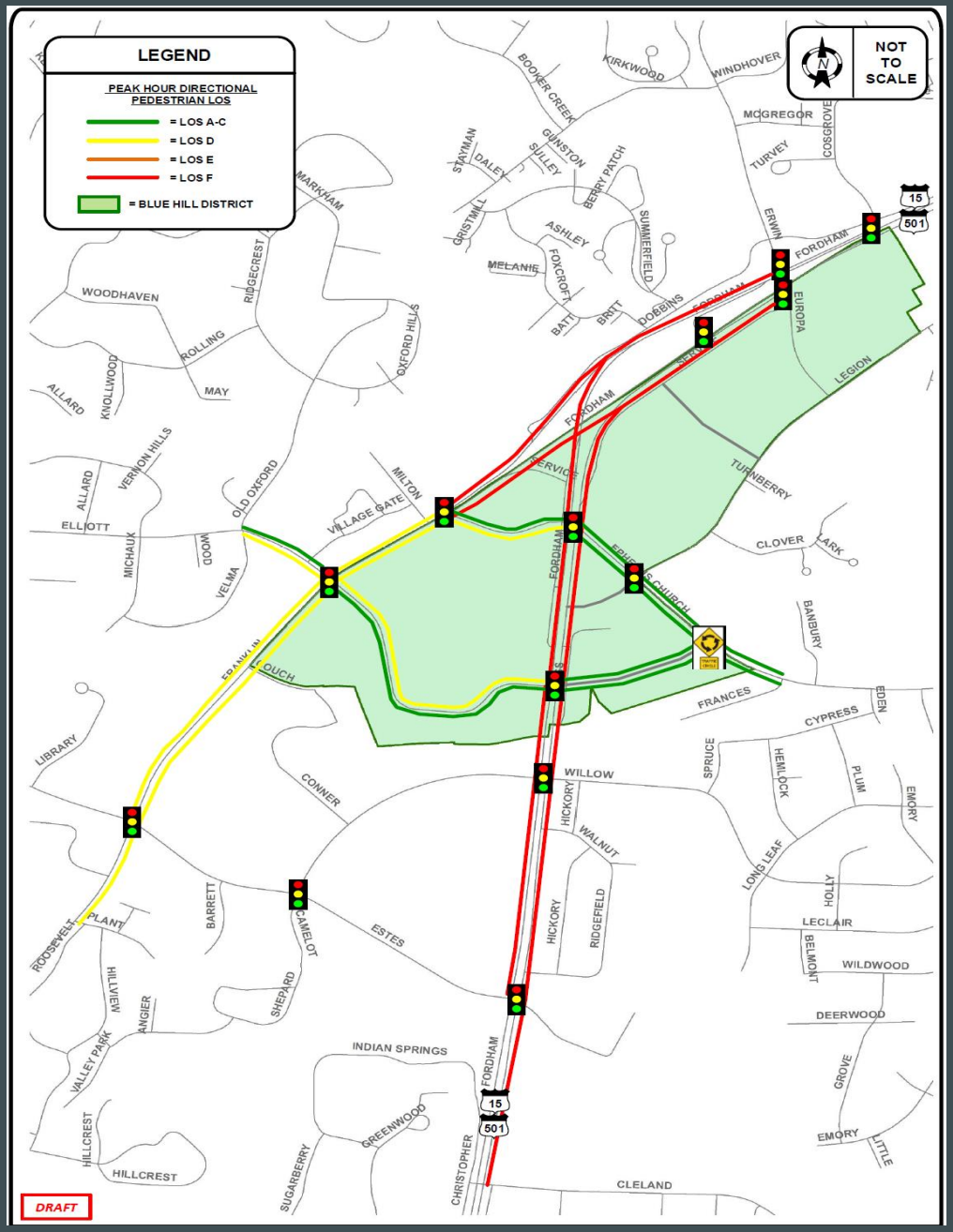

Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "Build+Mitigation" Scenario

Multi-Modal LOS Results

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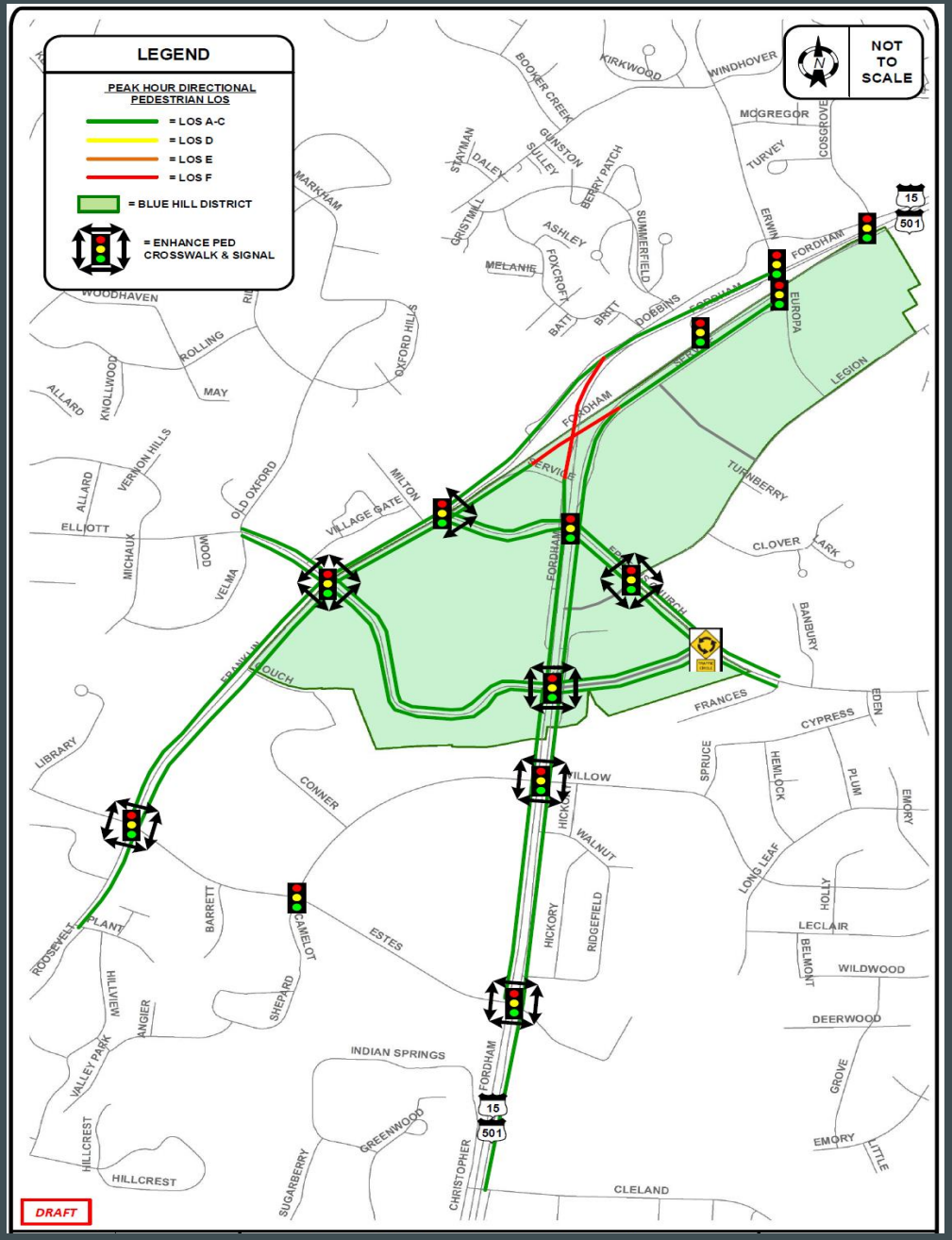


2030 Multi-Modal Analyses

Bicycle Operations

- "No-Build Scenario" Assumes Only Committed Projects in Blue Hill District Area
- Town Mobility Plan – Considered in Mitigation Scenario
- Assume E-F District Developments will Maintain/Improve Local Bicycle Connectivity
- Other Change is Adjacent Traffic Volumes

2030 Multi-Modal Analyses

Multi-Modal Comparative Models

Bicycle LOS

- Outside Travel Lane Width (narrow, typical, wide)
- Bicycle Pavement Condition (desirable, typical, undesirable)
- Paved Shoulder/Bike Lane (Y/N)
- Side Path (Y/N)
- Side Path Separation (Feet)
- Affected by Traffic Volume/Speeds and Other Roadway Characteristics for Each Segment

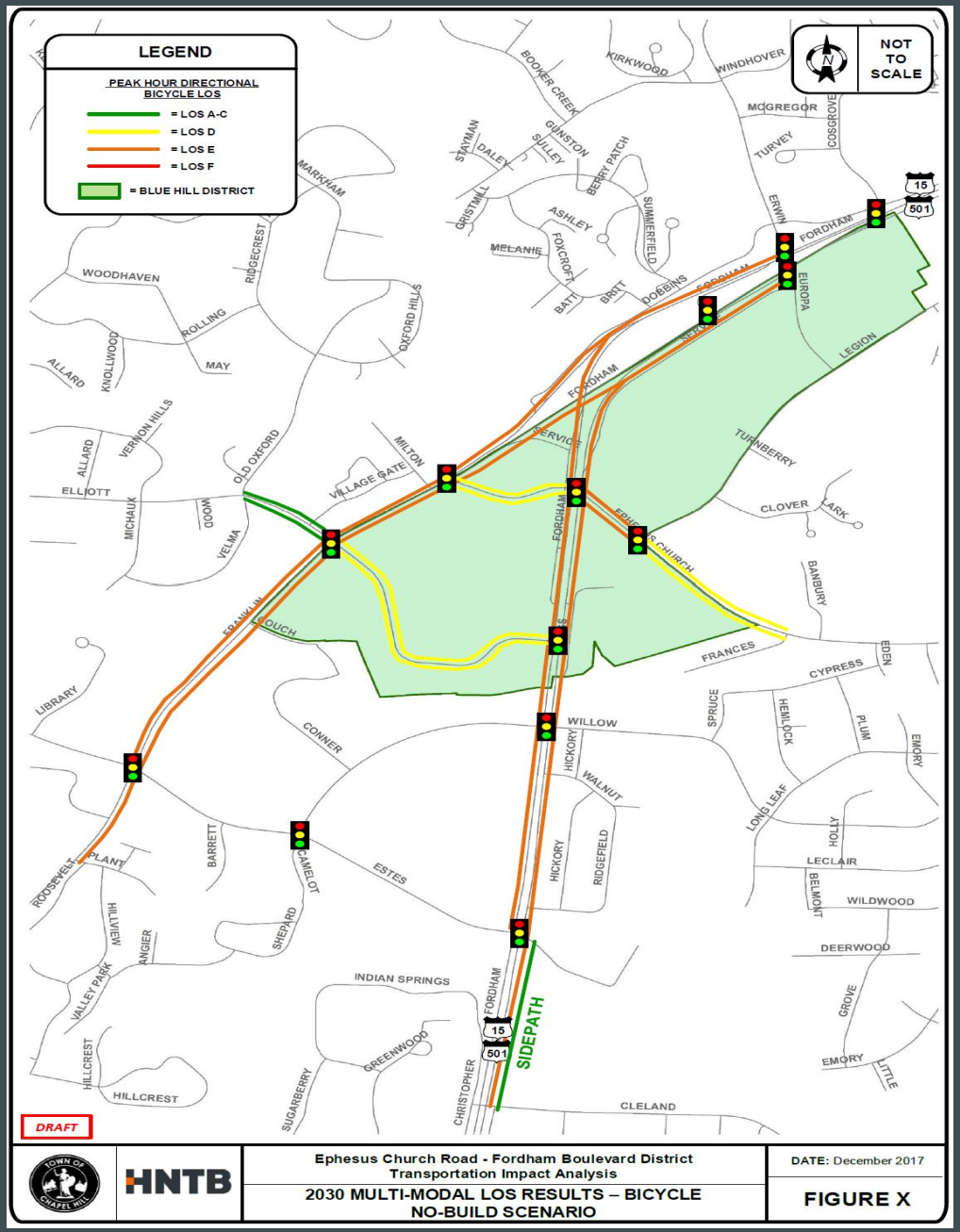
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "No-Build" Scenario

Multi-Modal LOS Results

Transit / Pedestrian / **Bicycle**



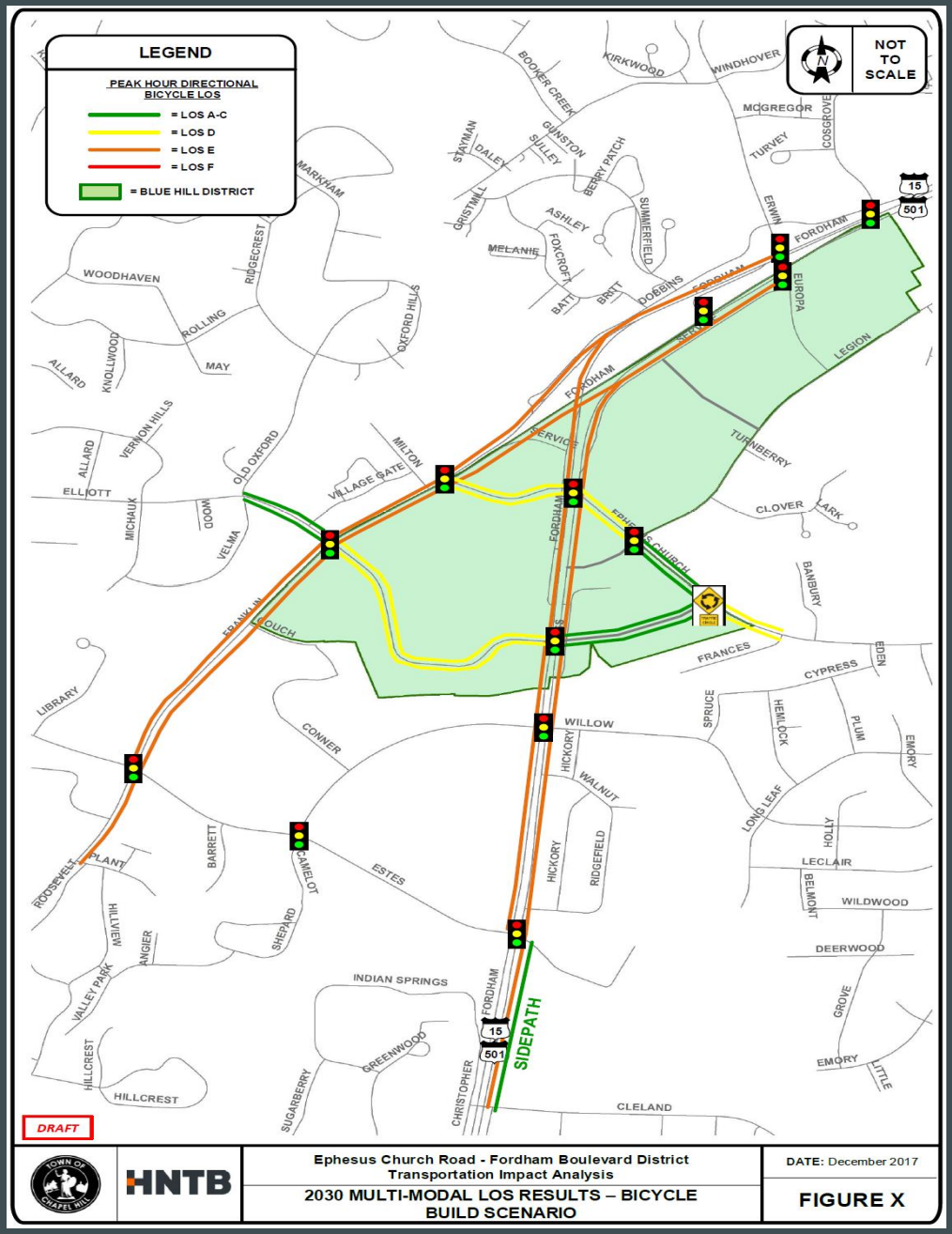
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

2030 "Build" Scenario

Multi-Modal LOS Results

Transit / Pedestrian / **Bicycle**



Blue Hill (Ephesus-Fordham) District

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Multi-Modal LOS Results

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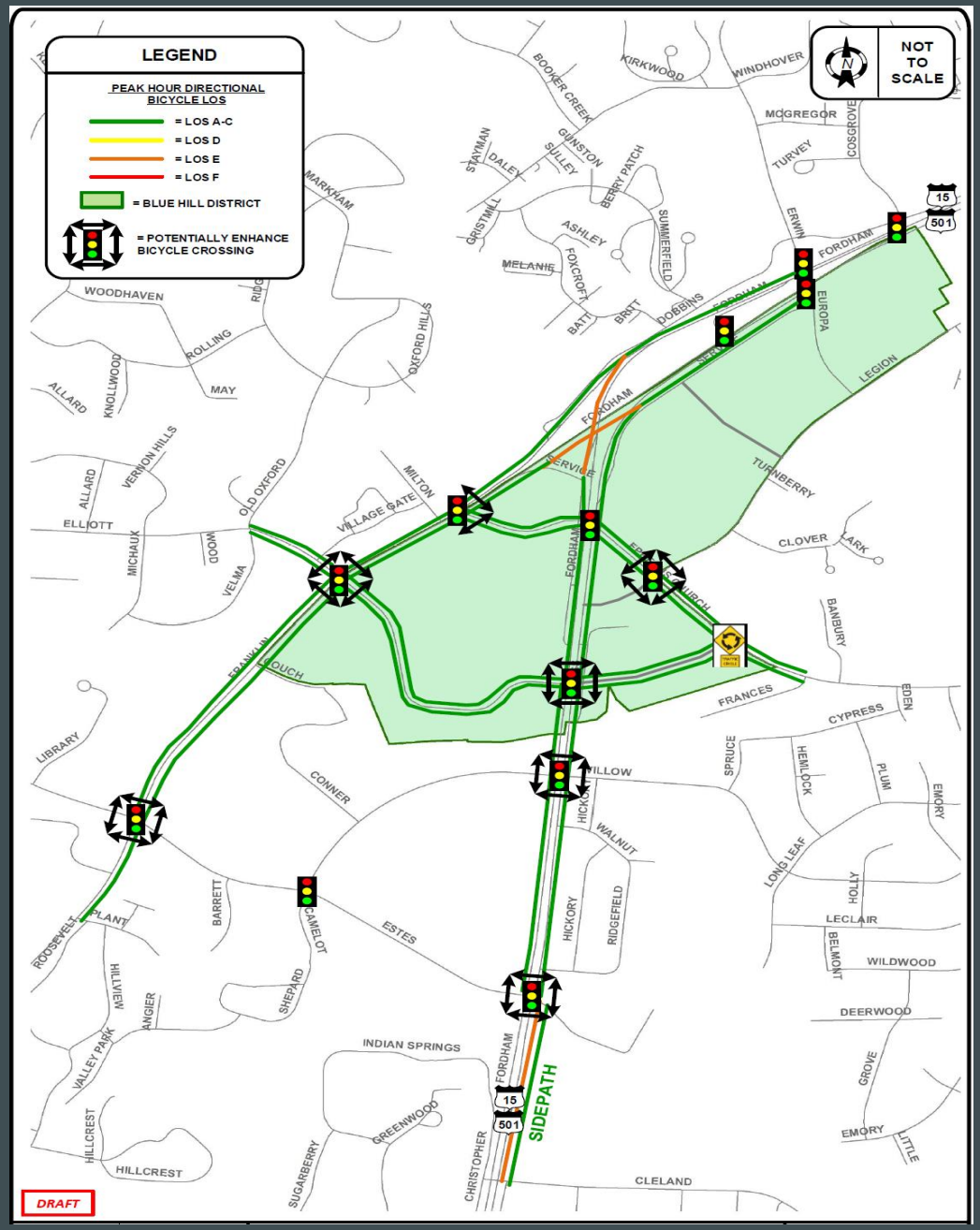
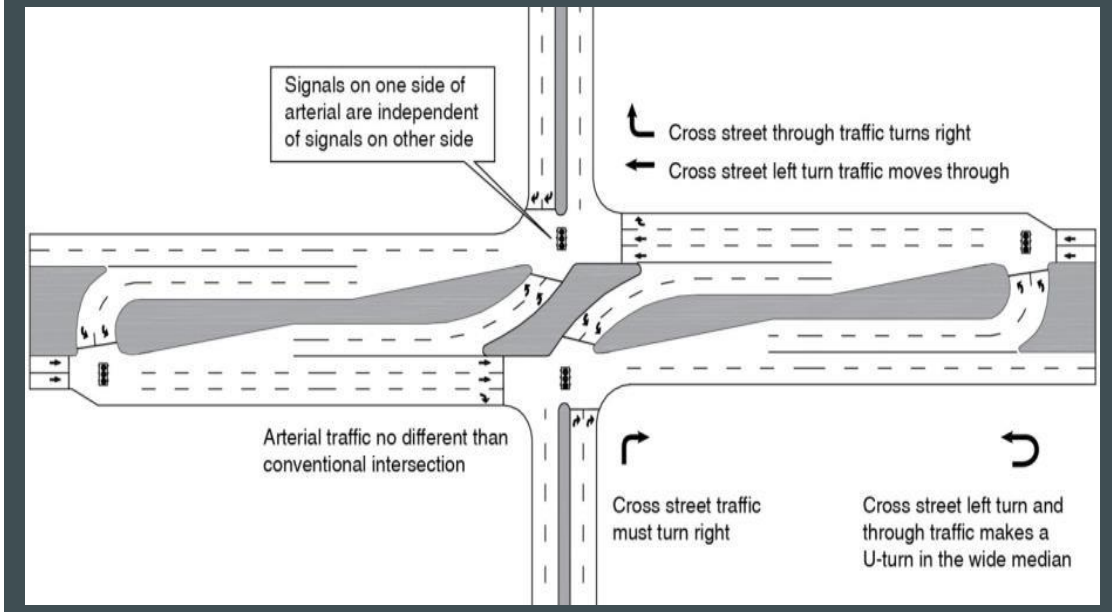


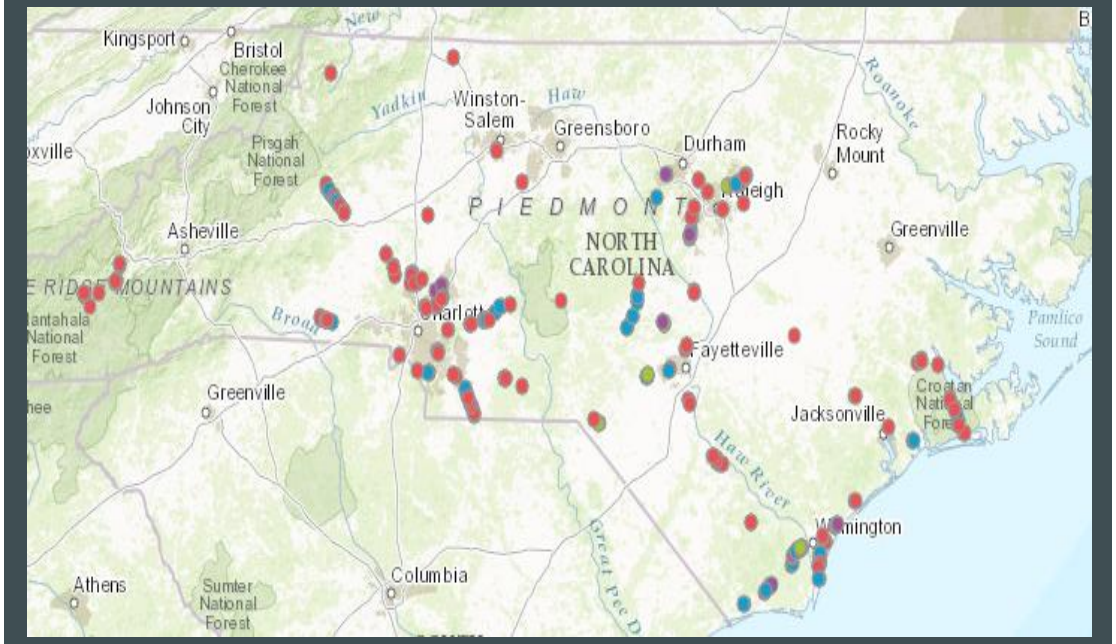
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

More About Superstreet Recommendations

What is it and why is it being considered?





Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

More About Superstreet Recommendations

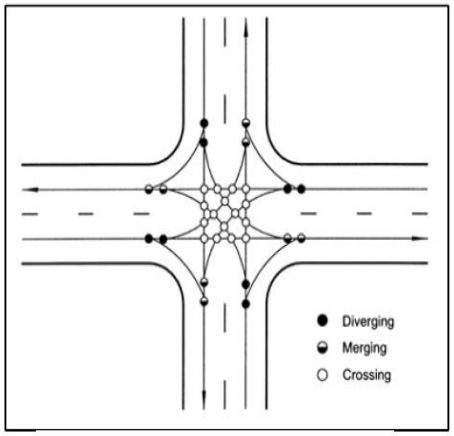
What is it and why is it being considered?

- Erwin/Europa – Not a “Typical” Design
- No Left-Turns at Intersection
- Wider the “Normal” to the South

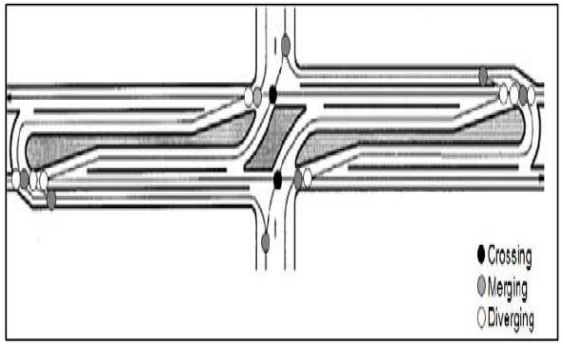
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

More About Superstreet Recommendations



Full Movement Intersection – 32 Conflict Points



Superstreet Intersection – 18 Conflict Points

Important Advantages

SAFETY

- 15 To 46 Percent Total Crash Reduction
- 22 To 63 Percent Injury And Fatal Crash Reduction
- Reduce Delay
- Great Progression Through Signals
- Speed Control – Less “Stop/Start”

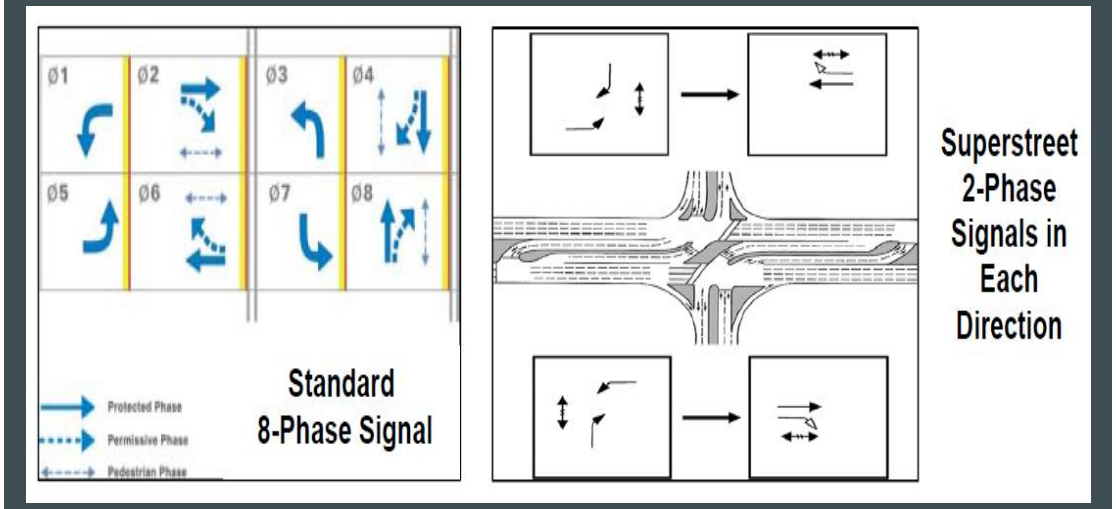
Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

More About Superstreet Recommendations

Important Advantages

Efficiency/Mobility



- Standard Intersection 8 Signal Phases, 180 Second Cycle, 30-40% Green To Main Street
- Superstreet Intersection 2 Signal Phases, 90 Second Cycle, 60-70% Green To Main Street
- Superstreet – Can Optimize Signals In BOTH Directions For Heavy Inbound/Outbound Traffic

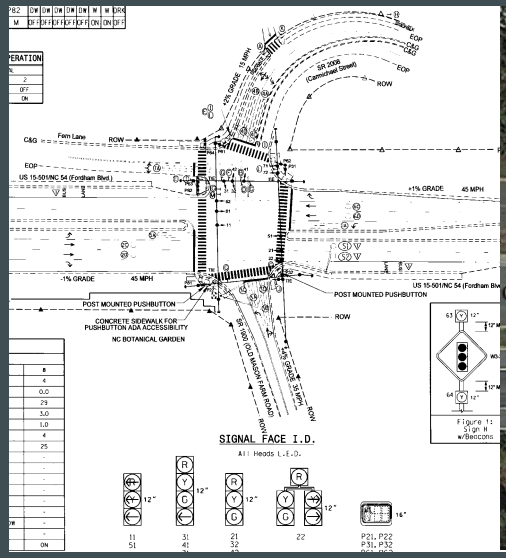
Blue Hill (Ephesus-Fordham) District

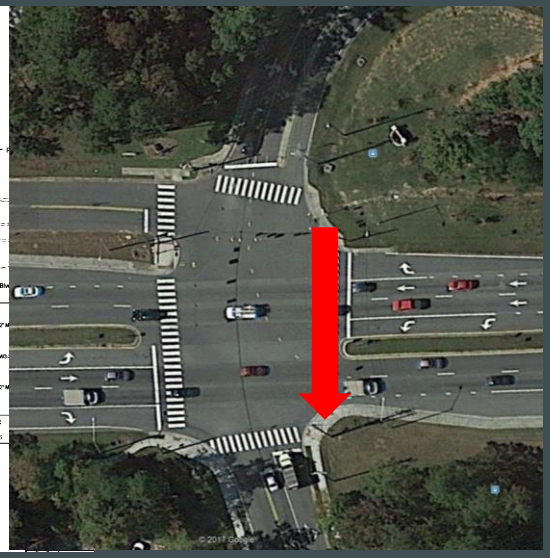
Transportation Impact Analysis

More About Superstreet Recommendations

Important Advantages

Efficiency/Mobility





- Pedestrian Crossing at Old Mason Farm = 29 seconds Walk + Flashing Don't Walk
- Equals Lost Time for 15-501 Corridor if Side Street Traffic Would Have Gapped Out
- Can Cause Progression Problems

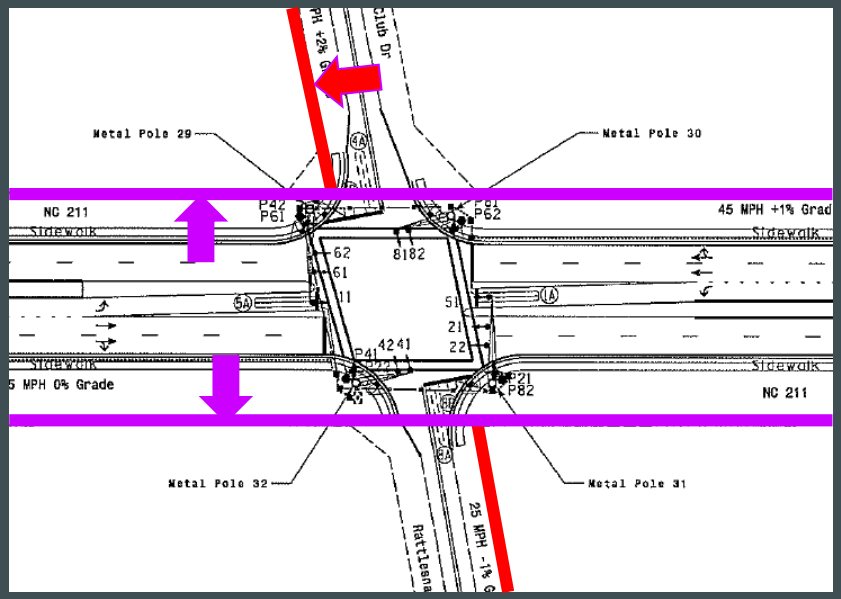
Blue Hill (Ephesus-Fordham) District

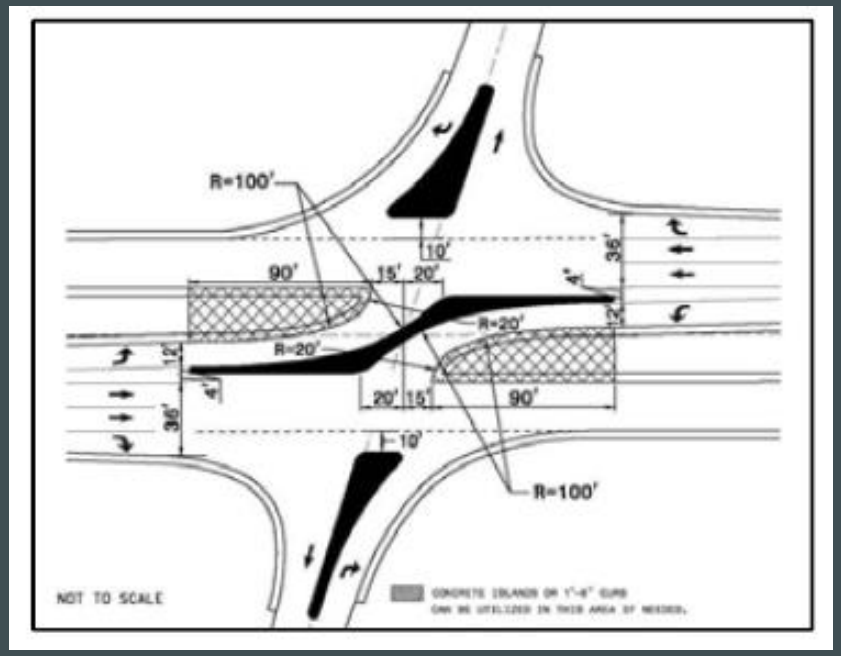
Transportation Impact Analysis

More About Superstreet Recommendations

ROW/Cost Advantages

Smaller Intersection Footprint – More Turn Lanes = More ROW Cost





Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

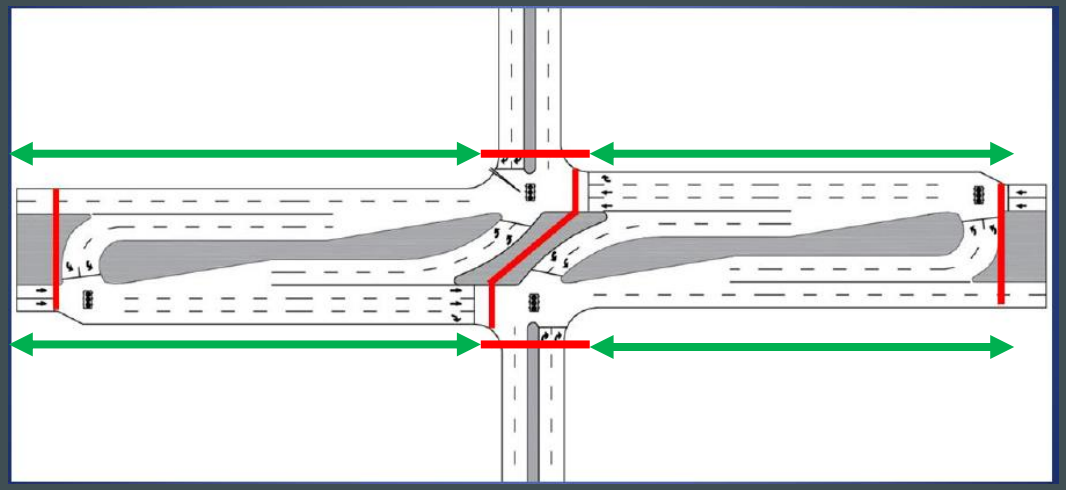
More About Superstreet Recommendations

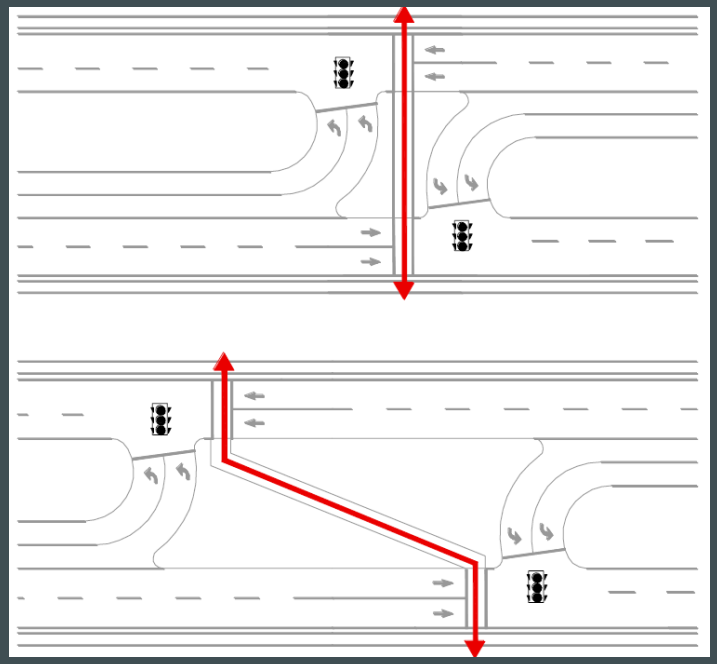
Pedestrian Advantages

Flexible Places for Arterial Crossing

Shorter Wait Times (60 sec versus 120 sec)

Shorter Walk + Flashing Don't Walk Times





Blue Hill (Ephesus-Fordham) District

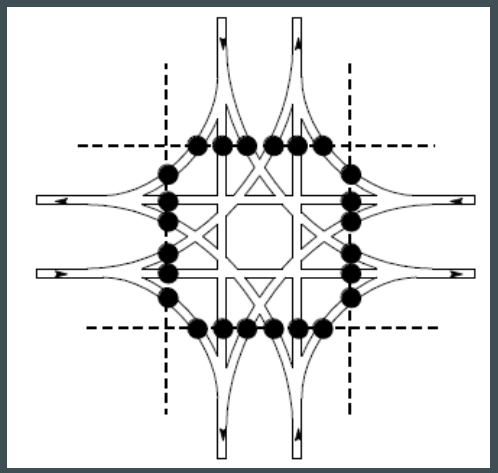
Transportation Impact Analysis

More About Superstreet Recommendations

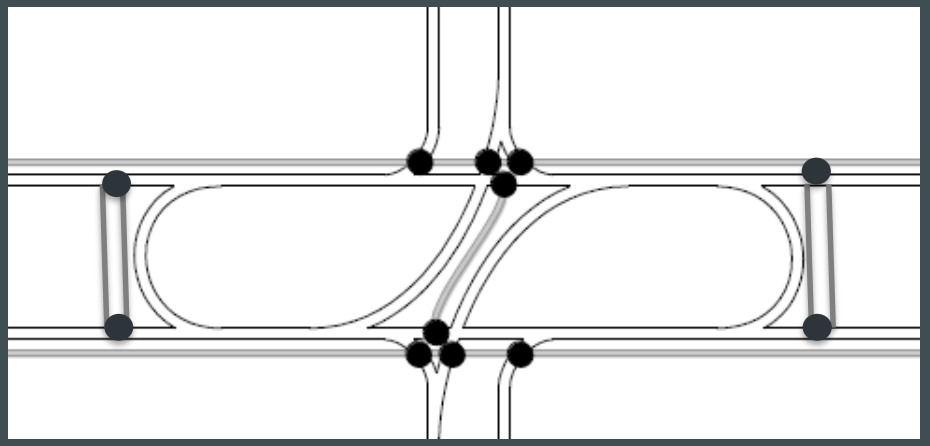
Pedestrian Advantages

- Less Conflicts
- Only Looking at One Direction Crossing Main Street
- Median Refuge

Conflict Points



Conventional intersection
24 points
(32 including u-turns)



Superstreet intersection
12 points
Including u-turns

Blue Hill (Ephesus-Fordham) District

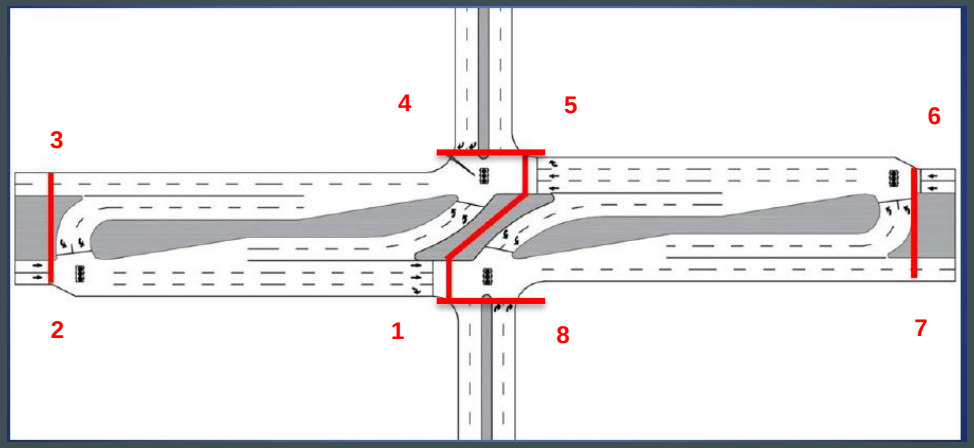
Transportation Impact Analysis

More About Superstreet Recommendations

Pedestrian Advantages

Pedestrian Routes

- Of 48 Possible Pedestrian Routes…
  - 34 Better With Superstreet
  - 8 Same With Superstreet
  - Only 6 “Worse” With Superstreet (1 To 4, 4 To 1, 4 To 8, 5 To 8, 8 To 4, And 8 To 5)



More About Superstreet Recommendations

Bicycle Advantages

- Conflict Point Reductions
- Smoother Traffic Flow / Less Congestion
- Opportunity to Cross at More Points at Signalized Crosswalk Connections with Refuges

More About Superstreet Recommendations

Transit Advantages

- Less Congestion = More Reliable Service and Headway Maintenance
- U-Turn Bulb Design Can Accommodate Truck/Bus
- No Significant Disadvantages

More About Superstreet Recommendations

Economic Effects of Access Management Techniques

- NCDOT Study in 2010
- 16 Sites/789 Businesses
- Included Erwin/Europa Superstreet Area
- Before and After Comparison Showed No Evidence of Negative Economic Impacts
- Comparison Sites – Business Owners Concerned
- Actual Sites – More Positive Perceptions

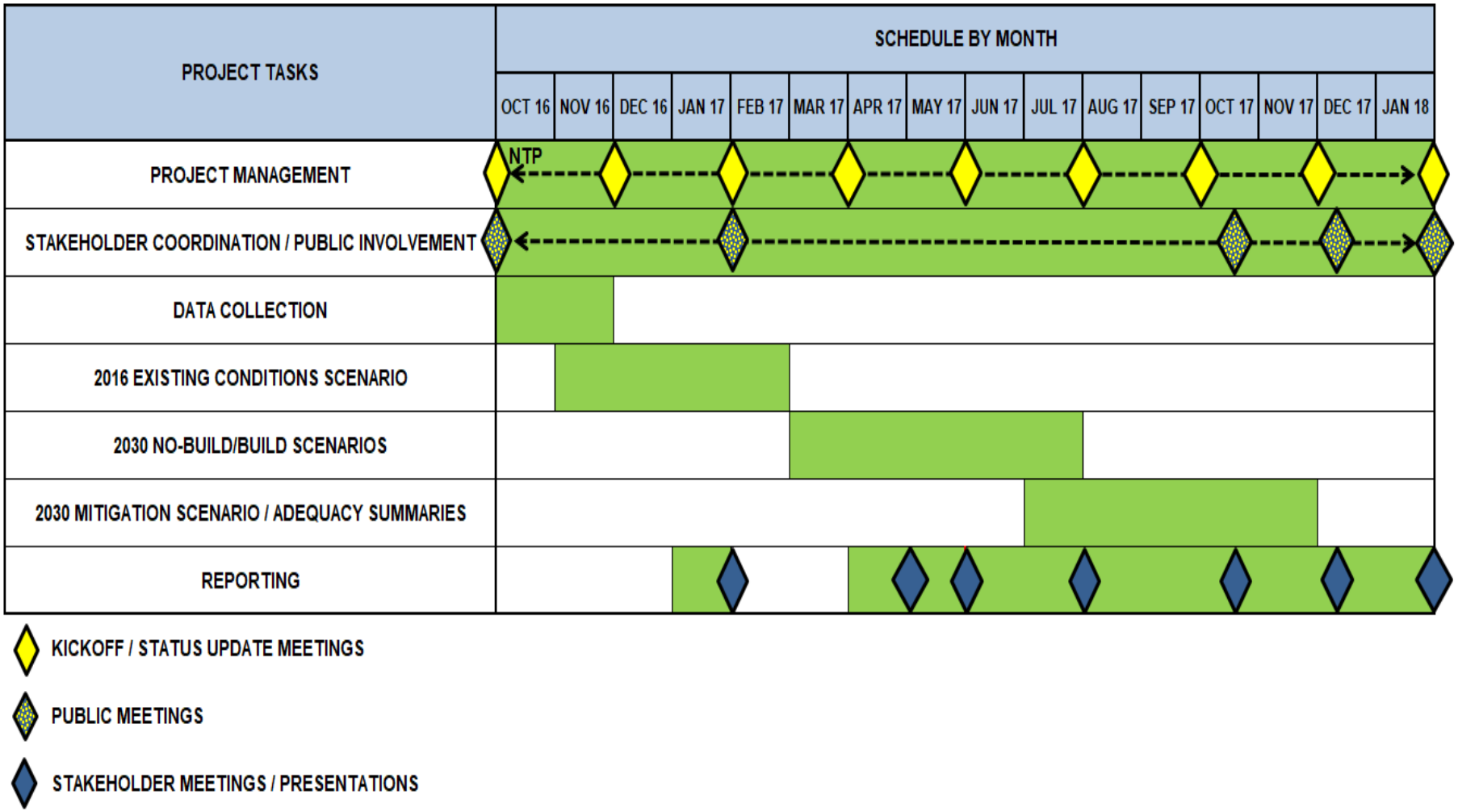
Next Steps

- Public & Stakeholder Input from Meeting and Draft Documentation
- Revisions to Documentation and Recommendations
- Transportation Adequacy Summaries for Individual E-F Development Projects
- Final Presentation to Town Council

Blue Hill (Ephesus-Fordham) District

Transportation Impact Analysis

Project Schedule – Next Steps



Blue Hill (Ephesus-Fordham) District Transportation Impact Analysis

QUESTIONS AND DISCUSSION

TOWN OF CHAPEL HILL

HNTB